DISTINCTIVE AND EXCLUSIVE

Sales Appeal

Only Universal Cooler offers this full coverage of what your customers want . . . *and expect* . . . at lower prices!!! • Universal Cooler progress is carried to NEW highs in these 15th Anniversary Models. • Cash in on the advantages this old, well established organization offers in household refrigerators. Send for the facts.

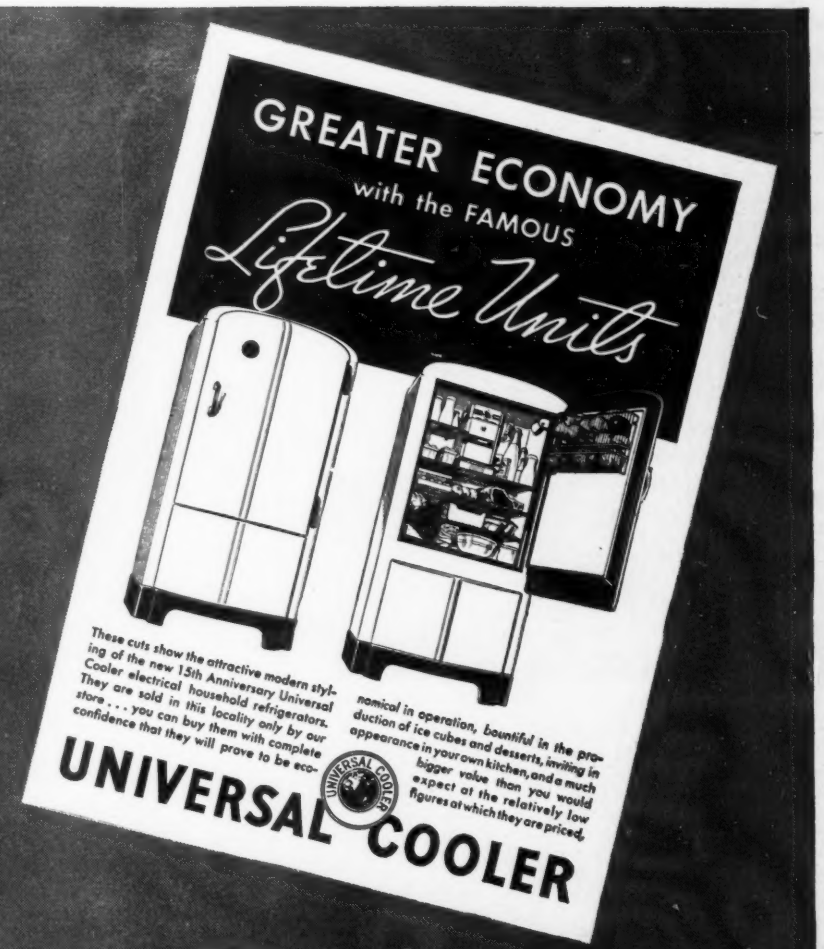
Read these sales making features . . . Learn how Universal Cooler can increase your sales . . . Make more money for you

Wire or Write Domestic Sales Department

UNIVERSAL COOLER CORPORATION, DETROIT, MICHIGAN
and in Canada, Brantford, Ont.

See First Showing at **NATIONAL HOUSEFURNISHING SHOW, January 10-16**
UNIVERSAL COOLER EXHIBIT Room 439A • Stevens Hotel, Chicago • PRIVATE BRAND EXHIBIT Room 440A

NEW Cooling PRINCIPLE RETAINS NATURAL FOOD FLAVORS
The time-tried freezing unit in the new DeLuxe Quality Universal Cooler electrical household refrigerator brings a new meaning to food preservation. This Cooler, which has Down Draft "Double" Cooling, provides extra circulation of low temperature air within the cabinet. It keeps the moist air in circulation instead of removing it. This brings about a more uniform food preservation temperature which actually betters foods. Natural food flavors are retained under this new refrigeration principle.
NEWLY STYLED IN THE Modern MANNER
This new Universal Cooler refrigerator brings you the latest in household electrical refrigeration at a price you can afford. The friendly modern styling will give your kitchen that much desired "fresh" new appearance . . . the new baked lacquer exterior finish assures your refrigerator looking inviting for years to come. Just wash it as you would a glass dish. These DeLuxe Quality refrigerators are purchased direct from the manufacturer. You pay nothing for a middleman's cost of doing business. • We sell this 15th Anniversary product of the old, well established famous Universal Cooler Corporation with complete confidence . . . you can buy these at lower prices with assurance of efficient, low cost refrigeration. The famous "Lifetime" current-saver unit assures greater economy. The new Down Draft "Double" Cooling principle makes your foods even more appetizing. See our display of these New DeLuxe quality models . . . . NOW!
UNIVERSAL COOLER


GREATER ECONOMY with the FAMOUS Lifetime Units
These cuts show the attractive modern styling of the new 15th Anniversary Universal Cooler electrical household refrigerators. They are sold in this locality only by our store . . . you can buy them with complete confidence that they will prove to be economical in operation, bountiful in the production of ice cubes and desserts, inviting in appearance in your own kitchen, and a much bigger value than you would expect at the relatively low figures at which they are priced.
UNIVERSAL COOLER

DOWN-DRAFT Double Cooling
More Even Temperatures Greater Economy
A new principle of refrigerating foods is supplied in these 15th Anniversary DeLuxe Quality Universal Cooler refrigerators. More even temperatures are maintained throughout the entire cabinet . . . vegetables stay crisp and fresh . . . there is less drying out of foods . . . and direct cooling of bottled goods on the upper shelves of the refrigerator is provided. In addition there is greater economy of operation with the famous Universal Cooler "Lifetime" current-saver unit.
NO VISIBLE FROSTING
An indication of the advantages of this new type Cooler are indicated when you examine an operating refrigerator. The Cooler has no visible frosting . . . more than twice the effective cooling surface. The extra non-frosting surface you see on the Cooler increases the volume of refrigerated air circulation . . . recirculates cold moist air hence foodstuffs are not dried unnaturally. See one of these modernly styled DeLuxe Quality refrigerators today . . . learn how economical it is . . . find out how it will actually better foods . . . you will be surprised at the really low cost.
UNIVERSAL COOLER

A BIG, BEAUTIFUL, STREAMLINED DeLuxe QUALITY REFRIGERATOR AT A PRICE YOU CAN AFFORD
See these New Universal Cooler models Now . . . . . Exclusively at our Store . . . . . Only here can you learn how the New Cooling Principle actually Betters Foods • Retains Natural Flavors
More for your money in these 15th Anniversary Models
Feature-full
UNIVERSAL COOLER

UNIVERSAL COOLER
DeLuxe QUALITY
15th ANNIVERSARY
Low PRICED
REFRIGERATOR
Although these new models are priced lower they appeal to all types of purchasers. We invite your consideration to experiences of typical buyers:
President of an Oil Company
The Department Store Executive
Laborer
Professional Man
UNIVERSAL COOLER

PROPER Preservation TEMPERATURE ACTUALLY Betters FOODS!
A new principle of food preservation is the result of the Down Draft "Double" Cooling of the 15th Anniversary DeLuxe Quality Universal Cooler refrigerators we are now showing . . . less moisture is removed from foodstuffs through more than doubling the effective cooling surface of the Cooler . . . foods actually retain their natural flavors . . . . . Consider this modernly styled up-to-date refrigerator with its famous "Lifetime" current-saver unit which is so economical in operation. Inspect these DeLuxe models . . . learn how your savings will practically pay for one.
UNIVERSAL COOLER

THE NEWSPAPER OF THE INDUSTRY

AIR CONDITIONING AND REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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TEN CENTS PER COPY

ASHVE Turns to 'Human' Phase Of Conditioning

Physiological Factors Are Program Topics at Convention Jan. 25

ST. LOUIS—Reports of physiological studies regarding air conditioning, both in the laboratory and in hospitals, will have an important part in the program of the forty-second annual meeting of the American Society of Heating & Ventilating Engineers, to be held in Hotel Statler here Jan. 25 to 27.

Other papers to be presented at the meeting cover a variety of subjects, including heat transmission, duct design, performance of outlets and grilles, fan characteristics, noise elimination, and oil burner, stoker, and vacuum pump performance.

A novel feature of the meeting will be a conference of delegates from local chapters on Monday morning, Jan. 25, in advance of the technical sessions. Speakers will be President G. L. Larson, First Vice President D. S. Boyden, Membership Committee Chairman W. A. Russell, and Past President W. H. Driscoll.

Technical sessions will open Monday afternoon, with President Larson presiding. Papers scheduled for presentation at the opening meeting include "Thermal Properties of Concrete Construction," by F. B. Rowley, A. B. Algren, and Robert Lander, and "The Specific Characteristic of Fans," by M. C. Stuart and J. B. Lusk.

Second session, on Tuesday morn-

(Concluded on Page 2, Column 3)

Frigidaire Forces Gather in Dayton

DAYTON, Jan. 12—More than 600 members of the national sales executive staff of Frigidaire moved into Dayton Tuesday for a series of meetings preliminary to the world-wide introduction of 1937 Frigidaire products.

Attending the annual meeting are distributors, district managers, district sales and promotion managers, district dealer contact representatives, district service sales managers, and executives of the Frigidaire export division from New York City.

First session to get underway was that of the service sales managers. These men, meeting at the Engineers' club, were greeted by Carl A. Copp, general sales manager, and V. A. Hetzel, manager of installation and service.

These early arrivals joined with others at the Victory theater where E. G. Biechler, general manager of Frigidaire, opened the preview of the 1937 field convention, which later will go on the road to appear in 33 strategically located cities to be attended by the more than 20,000 men from electrical shops, department and furniture stores, and utilities, who make up the national dealer and sales force.

Tuesday night, Mr. Biechler's an-

(Concluded on Page 2, Column 4)

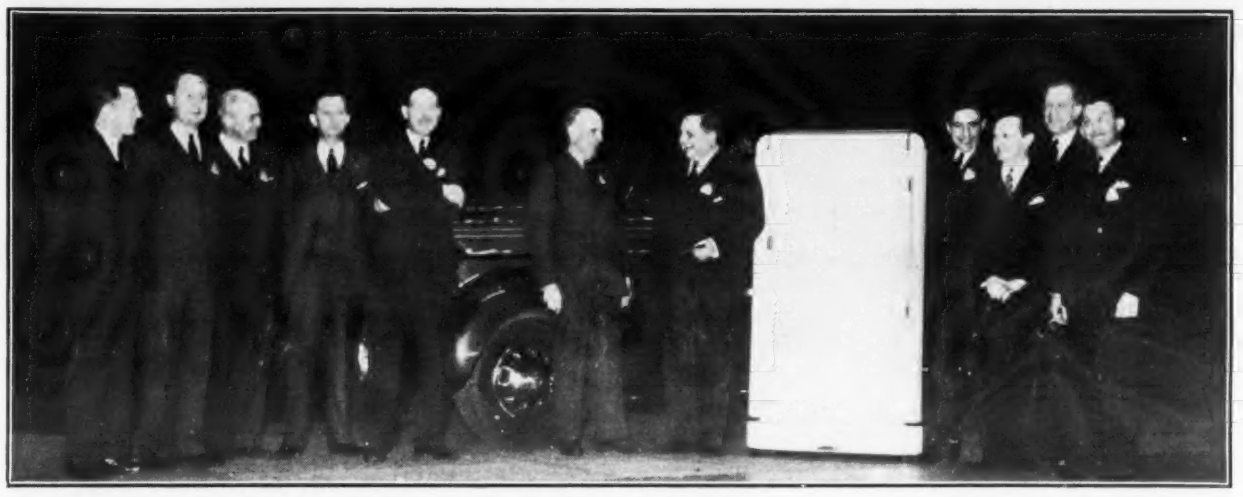
Birmingham Dealers Set Record in 1936

BIRMINGHAM, Ala.—Local electric refrigerator dealers will set a new sales record of 7,973 units this year, according to an estimate made by the Electric Refrigeration Bureau of Birmingham.

This figure, formed by combining actual sales with an estimate for the last two weeks of December, surpasses by 243 last year's mark of 7,730 machines, itself a 400% increase over 1934 sales. Electric Refrigeration Bureau estimates had not allowed for any increase in 1936.

Most local dealers believe that replacements will constitute a major portion of future sales, although the present local market is only 43% saturated. No sales estimate has been established as yet for 1937.

Signalizing the 'Marriage' of Nash and Kelvinator



Kelvinator was the "bride" and Nash the "groom" at the "marriage" of the two organizations following their recent merger, officially celebrated during the Kelvinator convention last week. "Witnesses," left to right, are E. L. Sylvester, director of public relations; W. E. Saylor, sales promotion director; Pierre Miles, range sales manager; Godfrey Strelinger, assistant to the vice president; H. G. Perkins, vice president; C. W. Nash, board chairman; George W. Mason, president; M. S. Bandoli, domestic refrigeration sales manager; V. J. McIntyre, laundry equipment sales manager; E. W. Lothrop, operations manager; Sam C. Mitchell director of advertising.

Norge to Introduce Lines at Regional Sales Meetings

DETROIT—Swinging its 1937 merchandising program into action a month earlier than in previous years, Norge Corp. is conducting a series of six regional conventions in key cities of the United States during January to present its new line of Norge refrigerators, allied domestic, and commercial equipment to distributors.

Regional meetings will be held in Salt Lake City, Los Angeles, Memphis, St. Louis, Cincinnati, and New York City.

Conducted by groups of factory representatives who are traveling on a staggered schedule, each regional convention has a three-day program. First two days' sessions cover the presentation of the complete line of 1937 Norge products, while the final day is given to an outline of advertising, sales promotion, merchandising, and finance plans.

Headed by John H. Knapp, vice president in charge of sales, Norge officials and factory members staging the regional meetings include: R. E. Densmore, general field manager; James A. Sterling, advertising and merchandising manager; Earl Bridge, washer sales manager; W. C. Rowles, commercial sales manager; Betty Appel, home service director; R. S. Beale, sales manager of heating activities.

J. R. Cameron, national service manager, A. H. Kitson, factory specialist in kitchen ranges, A. W. Seiler, president, The Cramer-Krasselt Co., Norge advertising agency; Ted Enns, C-K media specialist; and W. H. Crawford, vice president, Commercial Credit Co.

Speeding up its 1937 sales planning program, Norge prefaced its 1937 presentation with a series of individual conferences with distributors held in Detroit during November. Dealer meetings to be held following the current regional conventions, according to present plans, will be concluded by the middle of February.

In line with the material increase in Norge export sales reported for 1936, Sales Manager Knapp made a brief trip to England in December.

Stevenson and Secord Return to Rex Cole

NEW YORK CITY—Under a reorganization of executive personnel announced last week, direction of Rex Cole, Inc., General Electric distributor in metropolitan New York, returns to approximately the same status as existed prior to last May.

Robert Stevenson has returned as general manager, and D. F. Secord is again secretary and treasurer and manager of the operating department, succeeding R. E. Sinderbox, who has returned to General Electric. J. M. Walker, who joined the company last May, continues as general sales manager.

Sowell Joins Ward As Refrigerator Merchandiser

CHICAGO—Paul D. Sowell, who recently resigned as advertising and sales promotion manager of Leonard Refrigerator Co., has joined Montgomery Ward & Co. in a newly created position as merchandiser for the refrigerator division.

In his new post, Mr. Sowell will be associated with H. B. Barber, supervisor of the company's major appliance division. He will be responsible for all phases of the merchandising of Ward refrigerators—product improvement, distribution methods, and advertising and sales promotion.

Mr. Sowell began his association with refrigeration in 1928, when he joined 555, Inc., Little Rock, Ark. In 1934 he came to Leonard, and later in the same year was named advertising and sales promotion manager.

Cordiner Given New Post by G-E

NEW YORK CITY—Ralph J. Cordiner, former manager of the radio sales division and chairman of the radio management committee of General Electric Co., has been appointed assistant manager of the company's appliance and merchandise department by C. E. Wilson, vice president in charge. The appointment was effective Jan. 1.

Mr. Cordiner has been associated with General Electric since January, 1932, when he became manager of the heating device station at Bridgeport. In October, 1934, when the G-E radio division was formed, he was given responsibility for its management under the title of assistant manager of appliance sales. He became manager of the division in November of the following year.

Discharged from service in the U. S. Navy in 1919, Mr. Cordiner returned to Whitman College, Walla Walla, Wash., securing an appointment as part time salesman for the Pacific Power and Light Co. He remained with the company as merchandise manager of the Walla Walla division after he had finished college.

In 1922, he joined the appliance division of Edison General Electric Appliance Co. as a sales specialist, and from 1925 to 1927 was range and water heater specialist for that organization. He was appointed Pacific Northwest manager in 1927, and three years later moved into headquarters in San Francisco to become Pacific Coast manager.

Texas Outlet Merges With G-E Supply

DALLAS—Electric Household Appliances, Inc., Texas General Electric distributor, has merged with the Texas district of General Electric Supply Corp.

Glen C. Wasson heads the new organization; Dan Miller is appliance sales manager; and Will I. Wilt is sales promotion manager.

Branch offices are maintained in San Antonio, Houston, Fort Worth, and Abilene, Tex.

Restyled Cabinets Main New Feature In '37 Apex Line

CHICAGO—Smartly restyled and fitted out with many new convenience features and accessories, the 1937 line of Apex household electric refrigerators is being introduced to dealers at the National House Furnishing Show here this week.

There are seven models in the 1937 Apex line, and six of them have the new style cabinet design, details of which include a full front door, flush to the top; massive, bar-type hardware; an attractive nameplate at the center of the cabinet, with two chromium strips running across the cabinet; and a black base.

The remaining model, which does not have the new cabinet, is the price leader, being a 4.1 net cu. ft. model with a retail price (zone 1) of $129.95. Other zone 1 prices are as follows:

Dulux Models	
B-625	$129.95
B-665	169.95
B-800	224.95
Porcelain Models	
B-625-P	194.95
B-665-P	224.95
B-800-P	254.95

Claims are made for unusually large shelf areas in the various models. The 6.25 net cu. ft. model has 12.9 sq. ft. of shelf area, and the 8-cu. ft. model has 18.8 sq. ft. of shelf area.

New cabinet construction details include "super sealing" of the cabinet, claimed to eliminate corner leakage; balloon-type door gaskets, replaceable without the removal of any screws or tacks; Tylac breaker strips.

The two larger models have sliding shelves and a "safety zone" cabinet temperature indicator. All cabinets have indirect interior illumination.

Transparent radio-type cold control dials are illuminated from the rear. The control has semi-automatic defrosting, fast freezing and vaca-

(Concluded on Page 2, Column 4)

Baker to Head St. Louis Sales for Fairbanks

ST. LOUIS—T. A. Baker, veteran home appliance salesman, has been placed in charge of refrigerator, radio, and laundry equipment sales in the St. Louis territory for the local branch of Fairbanks, Morse & Co., distributor.

Mr. Baker has previously been associated with Norge Corp.

1937 Fairbanks-Morse Orders Up 103%

INDIANAPOLIS—Orders placed by distributors for electric refrigerators, radios, and laundry equipment at the recent Fairbanks-Morse convention here exceeded those of the previous year by 103%, reports W. Paul Jones, general manager of the home appliance division of Fairbanks, Morse & Co.

Kelvinator 1937 Plans to Center In Kelvin Home

Nash Merger Celebrated at Convention; New Washers And Ranges Shown

DETROIT—The Kelvin Home will be used as a major vehicle in selling Kelvinator products this year.

Thirteen hundred distributors, sales managers, field men, key dealers, and department store and utility guests learned this at a three-day convention last week, when the company introduced a line of 16 new refrigerators "specified by the American housewife," new lines of laundry equipment, and electric and gas ranges.

Throughout convention sessions, speakers referred to the value of the Kelvin Home, not as a real estate venture, but rather as the ideal method of demonstrating the use of Kelvinator home appliances, automatic heating, and air-conditioning equipment to the homeowner.

The value of the recent Nash-Kelvinator merger was also stressed by convention speakers. Distributors and guests learned that the company had officially become the Kelvinator Division of Nash-Kelvinator Corp. on Jan. 4.

Kelvin Home will be the link binding together all Kelvinator newspaper and magazine advertisements this year, and the distinctive black and white combination used last year in promoting the super deluxe line will this year feature all advertising copy.

In addition, Kelvinator will go on the air soon with a nationwide radio program, with a consumers' contest in which a Kelvin Home, Kelvinator appliances, and Nash cars will be the prizes.

The Kelvinator 1937 refrigerator line was developed in response to requests made in a nationwide survey of housewives conducted by the Wehrle Co., research agency. Sixteen models are in the line, in four series of units, ranging in size from 3.16 to 16.79 cu. ft. net storage capacity.

In the K, or standard line, are five models ranging from 3.16 to 7.19 cu. ft. net food capacity. These models have an exterior finish of Permalux enamel on bonderized steel, and a one-piece porcelain interior with rounded corners and acid-resisting bottom for the food compartment.

Four models are in the PK line, which differs from the K line only in that both interior and exterior finishes are of porcelain. Sizes of these units range from 5.16 to 9.2 cu. ft.

Three models are in the KS or "special" line, and range from 5.16 to 7.19 cu. ft. net capacity. Exterior finish is Permalux on bonderized steel, while the interior is of one-piece porcelain, with acid-resisting bottom.

Topping the line are four super deluxe, or SD models, ranging in capacity from 7.04 to 16.79 cu. ft. This series provides a two-compartment cabinet, one for food storage in which moist, uniform temperatures are maintained automatically, the other for freezing temperatures.

All of the SD models embody constant circulation of cool, deodorized air to assure even temperatures in all parts of the cabinet.

Greater accessibility, depth, and width of cabinet are stressed in the new models. Food compartments are waist-high. Models are streamlined, with softly rounded corners and chrome hardware.

Nameplate has been placed at the bottom of the cabinet, so as not to interfere with cabinet contour.

Shelves are of the narrow-spaced bar type, with rounded fronts. A new shelf arrangement has been added, eliminating half-shelves alongside the ice cube compartment, and permitting ample room for tall bottle storage.

Fast freezing has been provided in

(Continued on Page 4, Column 1)

TEMPRITE
holds beer temperature *accurately*

THIS valve that controls cooling temperatures is sensitive to changes in pressure of 1/10th of a pound. It makes no difference whether you draw one glass of beer an hour or let the faucet run continuously. Every ounce of beer drawn will be between 39 degrees F. and 41 degrees F. as it leaves the faucet.

TEMPRITE PRODUCTS CORPORATION

1349 East Milwaukee Ave., Detroit, Michigan

ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

ASHVE Program Topics Listed

(*Concluded from Page 1, Column 1*)

ing, Jan. 26, will include papers on "A Rational Method of Duct Design," by L. G. Miller; "The Noise Characteristics of Air Supply Outlets," by D. J. Stewart and G. F. Drake; and "Noise in Ventilating Systems and Methods for its Elimination," by J. S. Parkinson.

Tuesday afternoon's session will feature papers reporting on both laboratory and hospital physiological studies.

"Investigations on the Exchanges of Energy Between the Body and its Environment" will be presented by Dr. Charles Sheard and Dr. M. M. D. Williams; "Fever Therapy Induced by Conditioned Air," by F. C. Houghten, Dr. M. B. Ferderber, and Carl Gutberlet; and "Cooling Requirements for Summer Comfort Air Conditioning," by Mr. Houghten, Mr. Gutberlet, F. E. Giescke, and Cyril Tasker.

The annual banquet and dinner-dance will be held Tuesday night in the Statler ballroom. E. B. Langenberg will be toastmaster, and the principal address will be delivered by President Arthur Cutts Willard of the University of Illinois.

At the final technical session Wednessday morning, papers on "Heat Losses and Efficiencies of Fuels in Residential Heating" will be presented by R. A. Sherman and R. C. Cross; "Performance of Oil-Fired, Warm Air Furnaces in the Research Residence," by A. P. Kratz and S. Konzo; and "Condensate and Air Removal Rates in a Vacuum Heating System," by D. W. Nelson.

Key Specifications of 1937 Apex

Model	Capacity (Cu. Ft.)	Shelf Area (Sq. Ft.)	No. of Trays	Ice Cubes	Lbs. of Ice	—Exterior Dimensions— Height	Width	Depth
B-410	4.1	9.1	2	56	4.4	51⅞	23¾	22⅝
B-625	6.25	12.9	2	70	5.7	58	31¼	21¾
B-625-P	6.25	12.9	2	70	5.7	58	31¼	21¾
B-665	6.65	15.6	4	91	7.4	58	31¼	23¼
B-665-P	6.65	15.6	4	91	7.4	58	31¼	23¼
B-800	8.0	18.8	4	112	8.8	61	31¼	23¼
B-800-P	8.0	18.8	4	112	8.8	61	31¼	23¼

Two-Cylinder Unit Used in '37 Apex

(*Concluded from Page 1, Column 4*)

tion setting, on-off switch, and 15 freezing speeds.

The large evaporator has a removable shelf, which makes available freezing space for meats, fowl, or fish. The evaporator is closed front and back on the two larger models. Ice tray "jacks" are provided on all models. Two rubber trays, and a double-depth tray, are provided in the larger models.

Refrigerating unit consists of a twin-cylinder compressor of conventional design, with spring and rubber mounting.

600 of Frigidaire Sales Executive Force at Dayton

(*Concluded from Page 1, Column 1*)

nual dinner to the field organization, at the Biltmore hotel, was attended by visitors, representatives of General Motors, and others who have a part in Frigidaire's operation.

Participating in the presentation of products and plans for 1937 were Frank R. Pierce, household division manager; Charles T. Lawson, household sales manager; Roy E. Smithson, commercial division manager; L. A. Clark, household advertising and promotion manager; T. W. Markham, commercial advertising and promotion manager; E. B. Newill, chief engineer; and E. R. Godfrey, works manager. Mr. Godfrey will be host to the visitors on a tour of the Moraine City and Taylor street plants on Wednesday.

Business sessions on Wednesday, Thursday and Friday will round out the activity, with the men returning to their home cities to prepare for the visits by the Dayton convention parties late in January and early February.

Michigan Men Gather At Westinghouse

DETROIT—Nearly 250 Westinghouse dealers and their "Keymen" from the Detroit area and 450 others from outlying Michigan cities attended the annual sales meeting sponsored by the central merchandising division of the Westinghouse Electric Supply Co. at the Mansfield plant last Thursday.

The men left the Union Station here on a special train reserved for their use by the company. Holding the meeting at the main plant in Mansfield is an innovation which some districts near the plant are making use of this year.

J. H. Campbell, manager of the Detroit branch; Charles Perry, sales manager, and Boyd Shepler, sales promotion manager, were in charge of arrangements for the group.

Following a luncheon at the Westinghouse Electric & Mfg. Co. cafeteria, Mr. Campbell presided at an afternoon sales meeting during which 1937 plans on household refrigerator and range sales were discussed. The men viewed sound pictures of the 1937 lines in both groups, made inspection tours of the plant, and talked over their problems with their sales heads. The meeting was held in the new million-dollar Westinghouse auditorium.

Speakers on the program included: J. F. O'Donnell, central merchandising manager; L. E. Septer, central range and water heater supervisor; J. E. Hugo, central promotion manager; R. C. Cosgrove, household refrigeration sales manager; and P. E. Rhinehart, central refrigerator supervisor.

Miss Clara Dean, Electric Range Specialist, Dies

TOLEDO—Miss Clara Dean, assistant director of the home economics department of General Electric Institute, specializing on electric range work, died suddenly while visiting friends here. Funeral services were conducted at her home in Bowersville, Ga., on Tuesday, Jan. 5. She was 34 years old.

Miss Dean had been associated with General Electric for about four and a half years.

Klein Reports Biggest Attendance at Showing

PHILADELPHIA—The greatest attendance in the history of Klein Stove Co.'s distributorship and the largest amount of orders accompanied the company's first showing of 1937 Leonard merchandise and advertising plans to dealers in the Philadelphia territory at a meeting Dec. 28 to 30 at Benjamin Franklin hotel, reports Walter L. Brous, director of refrigeration sales.

Three more showings will be held throughout the territory, Mr. Brous said, the first at the Pennsylvania Farm Show, Harrisburg, Jan. 18 to 22; the second at the Lycoming hotel, Williamsport, Feb. 1 to 5; and the third at the Echo-Allen hotel, Pottsville, Feb. 15 to 19.

General Electric Adds To Dallas Building

DALLAS—Construction of a three-story, brick and concrete addition to the local General Electric building will commence immediately, according to an announcement made by the General Electric Co.

The front portion of the annex's first two floors will be occupied by the local sales office and service shop of General Electric Supply Corp. At the rear, 11,000 sq. ft. of floor space will be devoted to the southwestern switchgear plant and service shop.

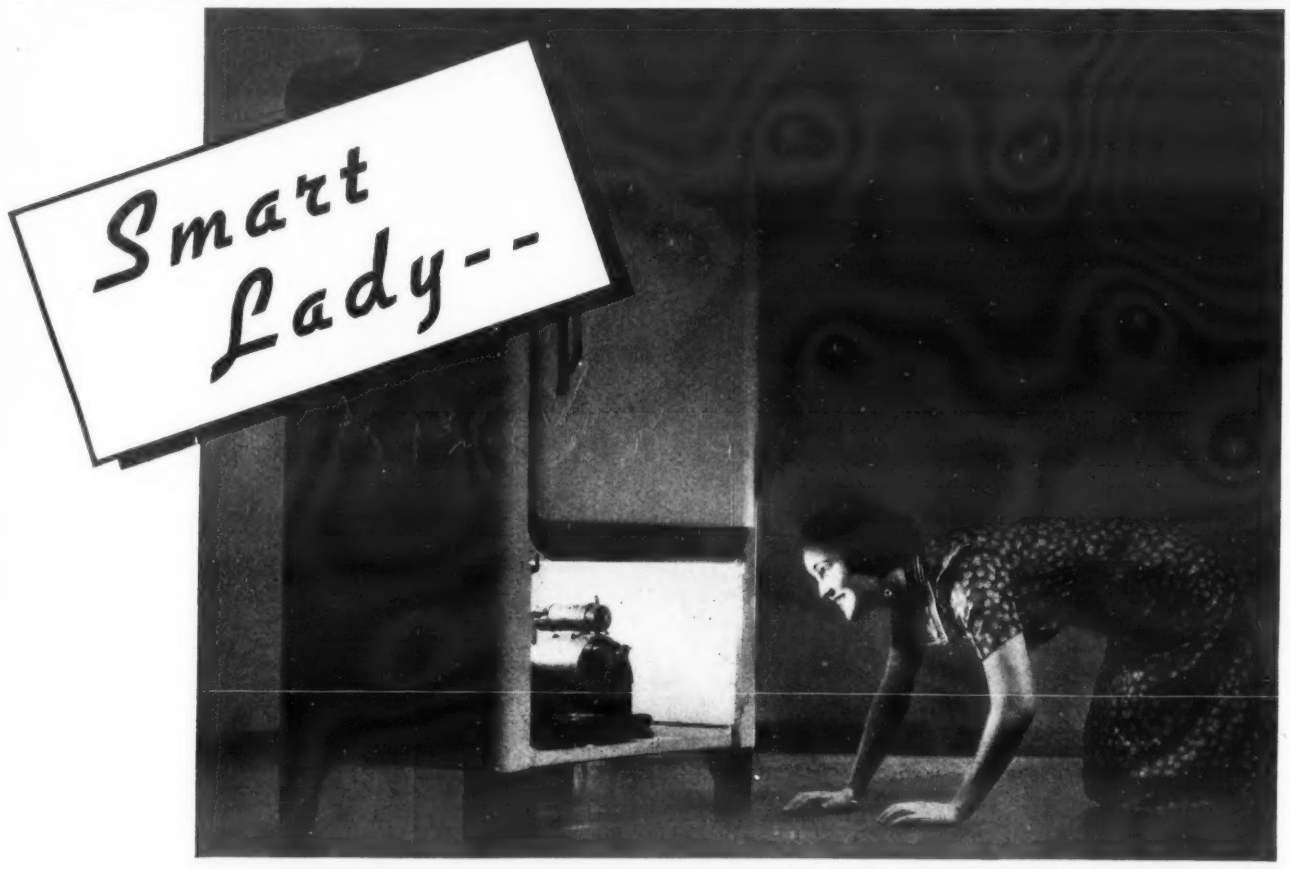
Times Appliance Displays Westinghouse Line

NEW YORK CITY—Times Appliance Co., New York City Westinghouse distributor, displayed the 1937 lines of electric refrigerators, ranges, and water heaters to dealers in the eastern territory at a meeting Jan. 8 in Hotel Commodore.

Present at the showing were Walter Reese, sales manager of New York Edison Co.; A. E. Rassiga, of the New York and Queens Power Co.; E. A. Holmbert, general manager of Bronx Gas & Electric Co.; A. H. Palmatier, general manager of Rockland Light & Power Co., Nyack, N. Y.

Westinghouse executives present included Norman Meyers, eastern general manager; William Loeber, eastern advertising and sales promotion manager; and William H. Quigley, advertising and sales promotion manager of Times Appliance Co.

Department store men at the showing included William Gillig, general manager of Ludwig Bauman Co., and Benjamin Weiss, general manager of J. Michaels & Co.



She knows they *all* have *all* the worthwhile features —but she's discovered what makes COPELAND *the* outstanding refrigerator of them all...

And this selfsame discovery will lead *you* to richer refrigerator profits. For it's true that *all* electrical refrigerators—including Copeland—have *all* the worthwhile features. But Copeland, in its twin-cylinder compressor and its super-efficient refrigerating mechanism, offers Copeland dealers the strongest sales-closer the industry has ever known.

With an engineering experience without parallel in both the household *and* the heavy-duty commercial field—with Copeland's new and complete line, smartly styled and sensibly priced—with the smashing sales and advertising plans which Copeland has under way for this year—with Copeland's new, liberal financing plan—you will do well to investigate what this pioneer manufacturer has to offer before *you* make *your* plans for 1937.

Take the first step today! Write, wire or phone J. D. McLeod, General Sales Manager, Copeland Refrigeration Corporation, Detroit, Michigan.

COPELAND

REFRIGERATION CORPORATION

DALLAS E. WINSLOW, *President*

DETROIT, MICH.

PIONEER MANUFACTURERS OF REFRIGERATION

SHELF-X

FLAT SURFACED EXPANDED STEEL SHEETS

SHELVING ADDS "SALES APPEAL" TO REFRIGERATORS

Send for free sample of Shelf-X and make the sliding cup test

■ Shelf-X shelving provides an important talking point for selling refrigerators. Because of its smooth flat surface Shelf-X permits the sliding of containers in any direction without tipping or spilling. And its attractive diamond design not only adds beauty to the refrigerator but also furnishes proper support for small as well as large objects.

Ideal for Air-Conditioning Screening

The large open area of Shelf-X assures free circulation of air; therefore it is as good for air-conditioning screening as it is for refrigerator shelving.

See for yourself the many advantages of Shelf-X. Send for free sample and complete details. Address Department 21-ACR.

Manufactured by:

UNITED STATES GYPSUM COMPANY
STEEL PRODUCTS DIVISION 300 W. ADAMS ST. CHICAGO

AT THE *Leonard* CONVENTION—

They said it with orders!

After seeing the new Leonard with its Master Dial and the program back of it—Leonard distributors signed orders for shipment during January and February which equalled 50% of the entire 1936 volume.

This is especially noteworthy because in 1936 Leonard had the greatest percentage increase in sales among leading manufacturers in the industry.

1937 will be Leonard's greatest year! The Leonard Master Dial will lead the way!

LEONARD REFRIGERATOR

DIVISION OF NASH-KELVINATOR CORPORATION • DETROIT, MICHIGAN

Range and Laundry Lines Presented By Kelvinator

(*Continued from Page 1, Column 5*)

most models, with special freezing shelves for all trays in the more expensive units. Rubber grids are provided for all ice trays, and in many models an ice tray release has been added for convenience.

The Kelvin control panel has been redesigned and is mounted atop the freezing chamber, with the thermometer an integral part. The cooling unit is of one-piece porcelain.

Electric lighting arrangement has been changed for the new models. The light is centered in the cabinet, and is fitted with an ivory shade, which diffuses the rays so as to light every corner.

A five-year protection plan, and a certificate of low cost of operation, Kelvinator features last year, have been carried over to apply to all units in the 1937 line.

Two major elements comprise the 1937 advertising campaign, said H. W. Newell of Geyer, Cornell & Newell, first, the use of the Kelvin Home as an advertising vehicle; and, second, extension of the 1936 program of black and white advertisements into the general magazine field this year. Last year these ads appeared only in "class" publications.

Kelvinator's announcement advertisement will appear sometime during February in both the "Saturday Evening Post" and "Collier's." It will be a three-page ad, placed on three successive right-hand pages. The first page will feature the Kelvin Home; the second will feature the general line of Kelvinator household products; and third will deal solely with the Kelvinator refrigerator.

"This opening announcement will be followed by a dual advertising campaign," Mr. Newell explained. "The first portion of this campaign will feature the Kelvin Home and the general line of appliances. The second phase of the campaign, while dealing exclusively with the new Kelvinator refrigerator, will also include a strong tie-in with the Kelvin Home.

"This extensive national advertising campaign will have comprehensive market coverage, reaching people in all income brackets. Some of the magazines used in this campaign, besides the 'Post' and 'Collier's,' include: 'Good Housekeeping,' 'Time,' 'American Home,' 'Better Homes and Gardens,' 'Fortune,' 'American Magazine,' 'Woman's Home Companion,' 'Liberty,' 'True Story,' 'Holland's Magazine,' 'American Weekly,' and 'This Week.'

Sam Mitchell, Kelvinator's director of advertising and sales promotion, stressed the importance of the Kelvin Home booklet as a builder of store traffic, explaining that it was not designed to sell Kelvin Homes but to sell Kelvinator products.

Mr. Mitchell then announced that "Kelvinator is going on the air." The new radio program, to be broadcast over a national network, Mr. Mitchell said, is the answer to requests by dealers and distributors all over the country.

"This program," Mr. Mitchell declared, "will attempt no direct selling. That is your job.

"We will, however, sponsor a radio consumer contest in which a Kelvin Home will be the principal award. Other prizes will consist of various Kelvinator appliances, and Nash automobiles."

Field Meetings to Replace Commercial Convention

Field meetings beginning Feb. 1 in Portland, Ore., and ending March 13 in Boston would replace the customary commercial part of the 1937 national convention, according to J. A. Harlan, sales manager of Kelvinator's commercial division, who addressed the Thursday morning session.

In explaining this departure from previous convention practices, Mr. Harlan declared that Kelvinator's 1937 commercial line and the sales promotion material accompanying it were so extensive that "it would take us a day and a half to properly show it and explain it to you."

For that reason, he said, Kelvinator's commercial division had desided to hold distributor-dealer meetings in the field at various strategic cities located throughout the country, starting on the west coast and working toward the eastern seaboard over a 41-day schedule.

More orders for Kelvinator commercials had been booked during the first week of January this year than during the whole month last year, Mr. Harlan told his audience. In conjunction with this statement, H. W. Burritt, vice president in charge of sales, reported a 54% commercial sales gain last year over 1935 figures.

New Features Played Up in Electric Range Line

Pierre Miles, sales manager of the range and water heater division, presented the 1937 Kelvinator electric ranges and electric water heaters, calling upon Lucian Kahn, treasurer of the Estate Stove Co., Hamilton, Ohio, to introduce the new line of gas ranges.

"Kelvinator is definitely in the electric range field," Mr. Miles stated. "Kelvinator is going to spend $300,000 in promotion for 1937."

Featuring the Scotch Kettle, armored surface element, convenient door-rack, dash board flip switches, one-piece table top, warming compartment, and airflow, single-unit oven, the new line of Kelvinator electric ranges includes seven models.

Designed for apartments and small homes, the Model ER 10 has two armored surface elements and a full-size, thermostatically controlled oven with stain resisting white porcelain table top.

For the family of moderate income is offered Model ER 20, with two surface elements, full-size thermostat controlled oven, Scotch Kettle, porcelain top, utility compartment, concealed crumb tray, and automatic timer receptacle.

Model ER 30 has three armored surface elements and a storage compartment in adition to the features of the ER 20. It is further distinguished by its flush type base design.

The master range of the entire line is Model ER 70, constructed entirely of lifetime porcelain and equipped with all the features of the other models. In addition it has a food warming compartment and a combination automatic timer and minute meter in one case.

Getting Their First Glimpse of 1937 Products

Top Row: 1) President C. E. Gambill of Gambill Bros., Chicago, and 2) Charles Welter, Gary, Ind. 3) Donald Caswell, 4) L. L. Langley, district manager, 5) Harold Bull, and 6) Jack Calpin of Public Service Co. of New Hampshire, in Manchester. *Bottom Row*: 7) Max Krich, president of Krich-Radisco, Newark, and 8) V. J. McIntyre, laundry equipment sales manager. 9) Kelvinator's newly appointed Domestic Sales Manager Marv Bandoli, 10) D. H. Straus, Houston, 11) J. W. Grandford, factory representative, 12) Jim A. Bertha, and 13) W. W. Short, Houston.

"The present market open for electric water heaters," said Mr. Miles, "is estimated at 100,000 units."

He cited market figures running over recent years, that of 1933 being 15,000 units, that of 1934 55,000, and that of 1935 65,000 units. The sales indications, Mr. Miles said, indicate that the 1937 market can absorb over 137,000 units and that value of retail business will reach $12,000,000.

Mr. Miles pictured the electric range industry as being in the profit era of its three-period life, and he said that every indication points to the fact that it will expand greatly in the next few years. In revealing the three-period life of the range industry, Mr. Miles said that every industry passes through three phases.

With the aid of a chart, he showed that beginning with the invention of the commodity the industry enters the promotion era which lasts for from 15 to 20 years. Then suddenly the public takes to the commodity, and the industry enters the profit era. This lasts for about five or six years, and after that the industry is in the staple era. In this third phase the sales taper off to an almost constant level, and the industry settles down to an indefinite period of stable existance.

Seven Models Included in Washing Machine Line

Kelvinator's 1937 line of laundry equipment, including washers, dryers, and ironers, was presented to the convention by V. J. McIntyre, sales manager of the laundry equipment division of the company. In introducing Mr. McIntyre, Mr. Burritt stated that in the new year the combined sales of electric refrigerators, washers, and ironers would be over 2,000,000, and that this total would be evenly divided between the refrigerators and the laundry equipment.

The new line of electric washing machines includes seven models ranging from the small, single-tub 5A to the double-tub model 13SA with rotary dryer and spin-rinse.

Five of the new models are of the wringer type and two employ the spinner principle of drying. Two of the wringer type models are finished in green and three in white, while in the spinner type one is finished in green and the other in white.

The new washing machines are streamlined, with softly rounded tops. No sharp corners protrude anywhere to come in contact with fabrics. In the white models, a longitudinal line of blue contrasts with the gleaming sheen of white. In the models finished in green, a black line is used as a contrasting mark.

Features of the new Kelvinator washer are the "Pressure-ator" wringer and the "Finflex" agitator. The "Pressure-ator" combines both standard types of pressure controls, the adjustable pressure bar type and the self-adjusting coil spring type. On top of the release mechanism of the "Pressure-ator" are a release bar and a pressure indicator.

The "Finflex" is an agitator having four curved fins shaped to give thorough agitation with the least possible danger of damage to the wash. It is made of aluminum and is easily removable.

One of the two spinner-type, higher priced washers features a sterilizing rinse by means of which hand rinsing is eliminated. Scalding hot water may be driven into the revolving spin dryer to sterilize the clothes. Warm filtered water may also be forced through the dryer to rinse the wash.

In both of the spinner models a tubful of clothes may be dried in a few minutes in the removable aluminum spin dryer basket. The spin dryer is started and stopped by a lever so placed as to prevent the opening of the lid while the spinner is in motion.

Tubs of 24-in. diameter and 20-gallon capacity are on the higher-priced models, while on the lower-price machines the tubs are slightly smaller and do not have the "Permalux" finish.

The mechanism of the washer is compact, and is housed in a black casing. It has five moving parts constantly running in a bath of oil, the flow of which is created by the mechanism itself, thereby dipensing with the necessity of replenishing the supply.

If requested, Briggs & Stratton gasoline motors are available on four Duplex models, as are special pumps.

Kelvinator has established a new factory in Alliance, Ohio, for the production of washing machines.

It was said that an additional field force of experienced men had been established in order to insure proper distribution of Kelvinator laundry equipment.

Kelvinator's line of electric ironers for 1937 consists of four models built and priced to meet the demands of any type of American home.

Saylor Outlines Promotion For New Laundry Lines

In connection with Mr. McIntyre's presentation of the new Kelvinator electric washer and ironer lines, W. E.

(*Concluded on Page 6, Column 1*)

Automatic refrigeration relieves a woman of a thousand cares, worries, annoyances—and needless jobs that wore her mother into wrinkled age.

EXTRA DRY ESOTOO and V-METH-L relieve the manufacturers and the service engineer of all worry as to the quality of the refrigerant necessary for satisfactory operation of their refrigeration units. They know EXTRA DRY ESOTOO and V-METH-L are pure, dry, and available for immediate delivery.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

WOLVERINE
COPPER TUBING
Wolverine refrigeration tubing is made of 99.9% pure electrolytic copper, annealed to the exact specified softness in a deoxidized and dehydrated atmosphere. A clean, mirror-smooth inside surface is uniform in every coil. Meets all requirements for manufacturer and for service work.
WOLVERINE TUBE CO.
1411 CENTRAL AVENUE DETROIT, MICHIGAN

A KELVINATOR PRODUCT ★ WITH A KELVINATOR PROGRAM BEHIND IT

Today's Greatest Opportunity - for Sales

All authorities agree that during the next few years electric ranges will show the greatest sales increases in the entire appliance field. The country is ready for the electric range.

And Kelvinator is ready with a line of ranges which from every angle are outstanding. They are more beautiful . . . more efficient . . . more economical—with many exclusive features that will instantly appeal to prospects.

Here is a real opportunity for you. See these Kelvinator products now. The Kelvinator distributor will be glad to show them to you and to give you all the details of the smashing advertising and promotional program which will be placed behind them in 1937.

GET INTO THIS BUSINESS NOW WITH THE NEW AND BETTER

☆ *Kelvinator* ☆

ELECTRIC RANGES

Kelvinator Explains Program for 1937

(*Concluded from Page 4, Column 5*)

Saylor, sales promotion manager, introduced and displayed to the convention the extensive program of sales promotion material with which Kelvinator is backing its "infant" lines this year.

The whole washer and ironer promotion program, said Mr. Saylor, has been broken down into closely associated elements which will enable both dealers experienced in handling the product and others selling them for the first time to present a convincing sales story to the consumer. He characterized Kelvinator's program as the finest ever offered washer-ironer retail outlets.

A seven-point program was demonstrated to the distributing group. First point in this program is "Getting Dealers," operating by means of the "Kelvinator Washer and Ironer Plan Book," a large promotion album. which outlines sales plans and describes the products.

Point two, said Mr. Saylor, is "Setting the Dealer Up in Business." Company aid in this direction is offered by: (1) Placing the models on the floor and showing how to demonstrate them advantageously; (2) use of floor displays to dress up the showroom; (3) using the new trailer plan for rural selling.

"Identifying the Dealer" — point three in the Kelvinator plan—has been aided by the offering of numerous promotion pieces to dealer outlets, including illuminated neon signs, window displays, banners, pennants, feature cards, agitator and wringer displays, and several others.

Advertising of the new washer and ironer lines, the fourth point in 1937 plans, has been divided between four media, according to the Kelvinator promotion head. Besides a national advertising program, larger advertisements in trade journals, and local newspaper layouts, several tabloid broadsides are offered dealers seeking to boost sales through this popular method.

Selling literature—point five—will this year consist of line folders, special inserts, specification sheets, wall charts, and a large demonstration album supplied to salesmen for presentation to customers following the first approach.

Point six in the Kelvinator 1937 promotion program—"Selling Plans"—are varied. Retailers may secure lingerie line advertising for both washers and ironers, clothes-pin aprons to present as door openers and door gifts, and charts demonstrating the operating economy of the new lines.

"Training Salesmen" — the final point in the program and designated as one of the most important by Mr. Saylor—will be headed by the offering of slide films with sound to distributors and dealers for training their sales forces. A retail sales manual and field demonstrations by an augmented Kelvinator home economics department will also aid in presentation of the 1937 washer and ironer sales story.

Sylvester Gives Facts On Kelvin Home Project

E. L. Sylvester, director of public relations, and managing director of the Kelvin Home project, discussed the entire Kelvin Home movement, outlining its origins, its progress, and its purpose.

Mr. Burritt, in introducing Mr. Sylvester's speech, quoted Lord Kelvin's statement that: "The life and soul of science is its practical application." The Kelvin Home," he continued, "is not just a model house. It is a national movement designed to further the interests of better living and to promote the sale of electric appliances.

"The outstanding present-day American problem is that of home improvement," said Mr. Sylvester in commencing his discussion of the Kelvin Home. "The importance of this problem is reflected not only by local promotion, but by national legislation and activity as well."

Clarifiying the Kelvin Home movement for those who thought that Kelvinator was going into real estate business, Mr. Sylvester explained definitely that such was not the case.

"These homes," he said, "are being built through arrangements with contractors and utility companies, and are being financed entirely by local capital. Kelvinator simply furnishes the designs and specifications to the independent contracting firms which build the homes.

"Each house," he continued, is equipped with a total of 18 Kelvinator products, including year-round air conditioning, and a year's free service is provided for each Kelvinator appliance installed. These homes, together with the Kelvinator products with which they are equipped, comprise the so-called 'Kelvin package.'

"If we were to build 1,000,000 homes per year for the next 10 years, we would still scarcely keep abreast of the constantly increasing demand for the adequate housing. Many new ideas, some practical and some not, have all led to a new and higher standard of living.

"The American people are slow to accept radical ideas," Mr. Sylvester explained, "so any change in housing standards must be evolutionary.

Speaking of the air-conditioning system employed in the Kelvin Homes, Mr. Sylvester emphasized the attempt to minimize operating expense as well as initial cost. "Natural cooling," he said, "has been used wherever possible. A simplified selective control panel makes it possible to change the system from winter to summer conditioning merely by pushing a switch."

Answering the frequently asked question regarding the size of the compressor used with the Kelvinator conditioning unit, Mr. Sylvester stated that the Kelvin Home in Detroit was cooled 12° to 15° below outside temperature by a ½-hp. compressor. The matter of compressor size, Mr. Sylvester admitted, depends upon the amount of conditioning required.

Entire operating cost, as far as fuel and electricity are concerned, will average about 50 cents per day, or less than $200 per year. This factor is essential, as the homes are intended for families whose income is between $2,500 and $3,500 annually, Mr. Sylvester said.

Distributors, Executives, and a Senator—At Kelvinator's Convention

First Row: 1) C. M. Attmore, Jersey City; 2) A. J. Williams, and 3) H. C. Smith, Brockton Edison Co. 4) Cal Mitchell, Carolina district manager, and 5) R. J. Everest, Duke Power Co., Charlotte, N. C. 6) R. P. Hussey, Hagerstown, Md., 7) E. G. Carpenter, York, Pa., and 8) George M. Bohman, Hagerstown. *Second Row*: 9) W. B. Farnsworth, Georgia Power Co., 10) F. J. Dodd, Rome, Ga., and 11) G. T. Bryant, Graybar Electric, Atlanta. 12) George King, Brockton Edison, 13) Campbell Wood, utility sales manager of Kelvinator, and 14) A. J. Williams. 15) A. J. Davis, 16) J. S. Kimmel, and 17) H. D. Dhayer, Davenport, Iowa. *Third Row*: 18) Russ Poirson, Chicago, 19) D. B. Williams Clarksburg, W. Va., and 20) H. A. Wilson, Huntington, W. Va. 21) President Mason in an after-shaving cha with 22) U. S. Senator Royal S. Copeland of New York. 23) Paul Kric of Krich-Radisco, Newark; 24) Regional Man Jack Crossin, 25) Ma Krich, and 26) Chester Norton.

Mason Tells Benefits of Merger With Nash

Hailing the merger of Kelvinator and Nash Motors, which was formally consummated Jan. 4, as one of far-reaching significance to both divisions of the new corporation, President George W. Mason said that Kelvinator's corporate structure had been benefited by the change and that one of its material results would be a more favorable competitive position for Kelvinator distibutors.

"I am proud of the fact that the name of C. W. Nash has become associated with Kelvinator," he said.

Mr. Mason emphasized mutually beneficial trade contacts which will be established through cooperation between Nash and Kelvinator dealers in the same communities, and urged the 1,300 Kelvinator distributors present to become personally acquainted with their local Nash retail organizations when they returned to their home cities.

Congratulating Kelvinator distributorships for their sales accomplishments during 1936, President Mason stated that the company's gains were greater than the industry average during the year, but that further gains could be made.

"Because it is too early in the year to feel the full effects of the spring buying wave which is to come, we cannot appreciate the results of the great business gains made during 1935," Mr. Mason said. "Costs of living have not increased faster than incomes, and I am entirely optimistic concerning the prospects for this year.

Don't Depend on Government For Everything—Sen. Copeland

"We cannot depend on the central government for everything," said Senator Royal S. Copeland of New York in addressing the congregation of distributors. "Private initiative was never more needed than now in housing.

"The serious governmental interest in improving the living and working conditions is significant. Slum clearance has been greatly advanced by the aid of federal funds. The PWA is building 51 slum clearance projects to house 22,000 families in 37 cities."

Significant as the slum clearance project may be, Senator Copeland remarked, it is designed to take care of only the lower income groups. What is needed is a program of better housing for the middle classes.

"In the Kelvin Home," he said, "you are carrying on where the government leaves off. You are bringing the benefits of a modern, electricified home to that great body of American who constitute the solid, substantial middle class that is the backbone of the nation."

Burritt, Down With 'Flu,' Talks From Sick Bed

Speaking over the public address system from his room in the Detroit Athletic Club, where he was confined with a touch of influenza, Henry Burritt, vice president in charge of sales of the Kelvinator division of Nash-Kelvinator Corp., welcomed the distributors to the convention.

In setting the keynote of the session, Mr. Burritt said:

"The stockholders of Kelvinator and Nash have voted their approval of the merger, thereby providing for a corporation that is truly one of the greatest in the industrial field.

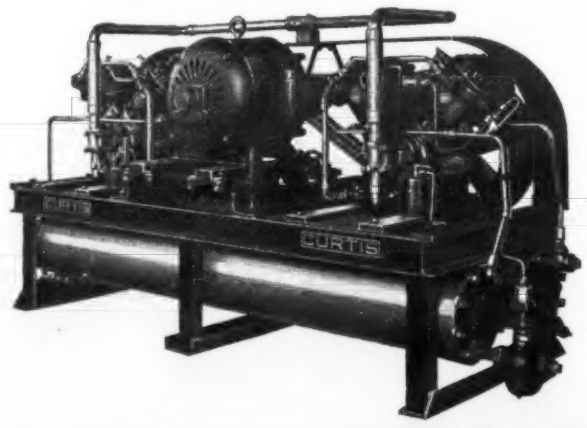
"The personnel of the Kelvinator division and the personnel of the Nash division remain unchanged.

"You will derive increased prestige. Twenty-four thousand stockholders have been added.

"Every advertisement for Nash cars is an advertisement for Kelvinator products."

What **83 YEARS OF EXPERIENCE** *Means*

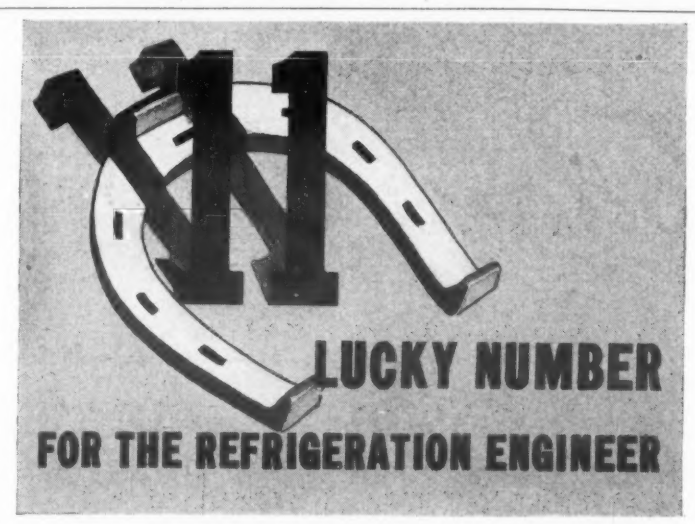
IT MEANS first of all that the Curtis organization has accumulated the benefits of successful manufacturing and engineering experience since 1854. It means that today Curtis designs and construction details reflect that fine engineering technique that only experience can produce. And the result is the care-free, efficient performance of each Curtis condensing unit.



It means too that the Curtis merchandising policy is time proved. Curtis does not sell direct nor through any outlet other than its recognized representatives. With such a product and policy Curtis dealers everywhere are making money. Write today for further information.

Represented in Canada by
CANADIAN CURTIS REFRIGERATION CO., Ltd.
20 George St., Hamilton, Ont.

CURTIS CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 KIENLEN AVE. ST. LOUIS, U. S. A.



Yes, and lucky for you, too, if you're a designer or manufacturer of refrigerating equipment. For here are eleven good reasons why ARTIC* is so widely accepted by manufacturers and service men as the ideal refrigerant for domestic and commercial automatic units.

SERVICE MEN prefer ARTIC because it is so easy to handle. Its efficiency under low pressures makes it easy to hold without leakage. To insure immediate delivery, ARTIC is readily available in standard containers at 61 distribution points in 52 cities.

Engineers: For complete technical information about ARTIC, write for *free* 56-page book, "ARTIC—The Refrigerant."
Service Men: Write for detailed information about servicing, distribution points, etc., contained in "ARTIC Service Manual" and the "ARTIC Service News."

11 GOOD REASONS FOR CHOOSING Artic

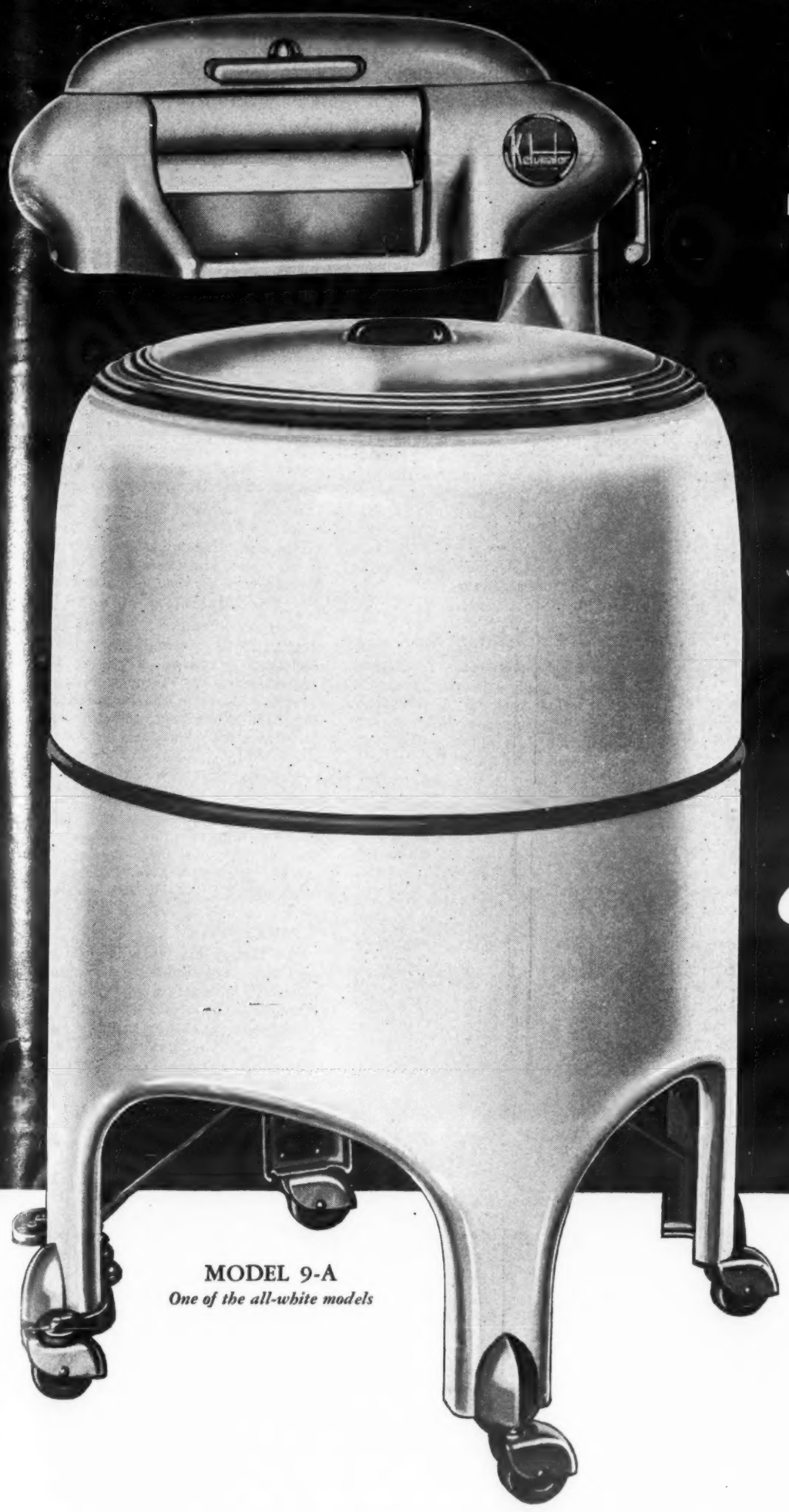
1. Small volume displacement per unit of refrigeration, permitting the use of small, compact equipment.
2. Not corrosive to ordinary equipment.
3. Operates at positive pressures, even at sub-zero temperatures.
4. Fast cooling and quick freezing.
5. Gives controlled low temperatures easily and efficiently.
6. Thermally stable, and does not decompose at any temperature existing in the refrigeration system.
7. Has low head pressures; adaptable to air-cooled condensers and light-weight equipment.
8. Economical of power.
9. Handled, serviced with ease.
10. Easy to "hold"—comparatively low leakage.
11. Easy to engineer—no unusual design problems.

*REG. U. S. PAT. OFF.

DU PONT THE R. & H. CHEMICALS DEPARTMENT
E. I. DU PONT DE NEMOURS & COMPANY, INC.
Wilmington, Delaware

Kelvinator Announces

A NEW WASHER THAT IS REALLY NEW!



MODEL 9-A
One of the all-white models

☆ Exclusive

STYLING
WRINGER DESIGN
AGITATOR
MECHANISM

. . . The new Kelvinator line of seven washers and four ironers completely covers the market

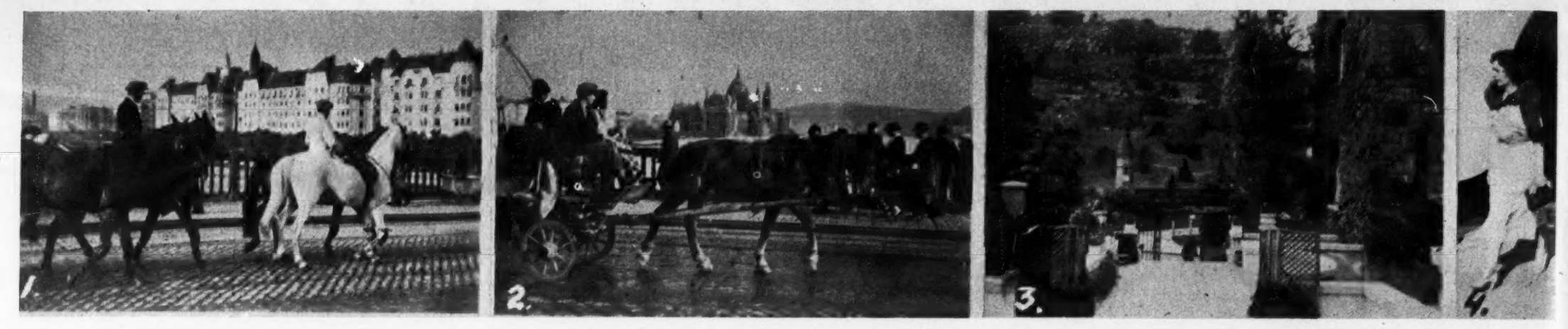
When you see this new line of washers and ironers you will realize instantly that Kelvinator has not brought out "just another line." They are *better* from every standpoint—

Distinctive styling . . . more efficient . . . and offering for the first time many *exclusive* new features. . . . Priced and built throughout to SELL against any competition.

Don't fail to see these new Kelvinator products. They are being shown by the Kelvinator distributor in your territory. He will also tell you all about the big advertising and promotional activities which will be back of these products in 1937.

Kelvinator WASHERS AND IRONERS

Budapest Is a City of Many Horses, Few Automobiles—Past Glories Enleaven Present Poverty



1. Raising blooded Arab horses is a profitable pastime for many Hungarian landholders. In the rear are apartment houses overlooking the Danube. 2. Peasantfolk coming in to the big city on a Saturday afternoon. 3. Enchanting vista from the St. Gellert hotel. 4. This smartly clad Budapest girl almost walked out of the picture.

Strange people, these Hungarians; but altogether delightful. Their Oriental ancestry is said to be responsible for their munificent hospitality, and certainly accounts for their language, which is totally unlike that of any other tongue in Europe.

Editor George F. Taubeneck, who was entertained in Budapest by the remnant of the tariff-harried refrigeration industry there, relates his impressions of glamorous Budapest, the musically creative gypsies, and shorn Hungary, in this instalment of his "World Series."

Next week readers will be taken to Switzerland, home of mountain scenery and bountiful electricity, after a last ride through Hungarian peasant-land.

AROUND THE WORLD WITH GEORGE F. TAUBENECK

George Washington With Frogs

After a fine dinner in the House of Parliament restaurant, and a visit to the gay Jardin d'Atelier, my friends took me on a long moonlight walking tour. If I hadn't been so strongly fortified with thick cabbage and-bean soup, thoroughly saturated with paprika (all foods in Hungary seem to taste of paprika—it's as inescapable as curry in the Oriental tropics), I couldn't have made it.

Europeans say that most Americans suffer from leg atrophy because they ride around in cars so much. You believe it after taking a "little" hike with a Viennese or Budapest citizen. By 5:30 a. m. I had seen all the moonlit statuary I could take.

Four sights stand out in my memory of this fatiguing (but infinitely entertaining) marathon: a statue of George Washington, the brooding figure of "Anoymus," Fisherman's Bastion, and the Tomb of the Unknown Soldier.

George Washington—in stone—looked better to me in Budapest (I had been five months away from the United States, and felt like an exile already) than he ever had in America.

Immediately behind him is a pond well stocked with frogs, "just like in America," my friend solemnly declared.

"Anonymus," is a really great piece of sculpture, the origins of which have been lost somewhere in the antiquity of Hungary's thousand years. It reminded me of St. Gauden's famous shrouded figure in Arlington cemetery; in the semi-darkness one felt the power of its mystery.

Budapest has been blessed with so many noble buildings and large-scale sculptings down through the centuries that it's no wonder the identity of one of them has been lost. As one of my friends put it, in his altogether delightful English, this is a statue "what we don't know from whom."

The Tomb of the Unknown Soldier (see picture in January 6 issue) consists of some fine central figures on horseback, all of which give a remarkable illusion of being in headlong motion, flanked on each side by a row of connected Ionic columns.

Somewhat like some of the remains in the Roman Forum, these columns support nothing. Functionally, they serve only to shelter the bronze statues of great Hungarian kings. While we contemplated this memorial in the fading starlight, a brilliant young lawyer on the party recounted tales of these almost legendary heroes.

Fisherman's Bastion is a memorial to St. Stephen, who introduced Christianity into Hungary (the towering Minaret at Eger bears witness to Mohammedan days). Like the Royal Palace, it is alabaster magic in the moonlight.

Post Script: Come to think of it, there was another entrancing sight on that walking tour, the Agricultural Museum, which so closely approximated my boyhood dreams of medieval castles that it might have been a Hollywood set for "King Arthur and the Knights of the Round Table."

There are almost 50 parks in Budapest, and more than a hundred planned squares. I'm sure we tramped through all of them that night. But it was worth the constitutional strain and drain.

* * *

Queen of the Danube

Magnificent bridges, spanning the Danube, connect the two parts of the city—Buda and Pesth. Picturesque Buda is the art center of the city; Pest, the business center. On Fortress Hill, in the heart of Buda, is located one of the most beautiful mansions in the world—the Royal Palace.

Pesth holds in the palm of her hand practically all of the public buildings: the Houses of Parliament, the Opera-House, theaters, concert halls, museums, and libraries. Here, also, is the Andrassy Avenue, which rivals in elegance the Champs Elysees of Paris.

Not only is Budapest celebrated as the Capital of Hungary and as a fashionable summer resort, but as a renowned City of Mineral Springs and Baths.

A haven for people with all manner of rusty ailments—rheumatism, gout, or squeaky joints—Budapest is supplied with a glut of clinics, laboratories, and sanitariums which are manned by specialists. This is one bathing-resort which operates the year round, although its waters are used more for curative than sportive purposes.

"Taking the cure" by bathing in mineral waters at a fashionable Spa is something that European society does as a matter of habit. As a social sport, the "baths" rank with yachting, riding to hounds, and wearing ermine to the grand opera.

Budapest—the Spa-Capital—has 80 different thermal springs, nine therapeutic bathing establishments, one medicinal bitter-water bath and more than 400 bitter-water springs.

The Capital of Hungary boasts two world-famous parks: Mt. St. Gellert and the St. Margaret Island. Mt. St. Gellert, on the right side of the Danube, rising from the river in a jagged precipice, has a famous *Surf-Bath*, first of its kind in Europe.

St. Margaret Island is the possessor of two famous baths: the Thermal Bath and Palatinus Strand-Bath. The latter has been called the *Lido of Budapest*, although personally I consider that a libel on St. Margaret's. Not least of its attractions is the fact that St. Margaret's is perfumed by the scent of 20,000 rose bushes.

* * *

Budapest's Treasures

Hungarian National Museum, founded in 1802 by Francis Szechenyi, is the leading museum in Hungary. This huge building is divided into six departments: National Szechenyi Library, Archaeological Department, Historical Department, Numismatic Department, Enthographic Department, and Natural History Department.

Several exceedingly valuable publications are contained in the library of this museum. To the writer, the most interesting items were the volumes of the Corvina library (15th century), Napoleon's proclamation to the Hungarians in 1809, and Luther's letter to the Prince of Saxony.

What Goes There?

Shrouded old Hungarian lady lorgnettes the passersby.

The Archaeological Department has three divisions of its own: prehistoric, migration, and Pannonian and Roman period. This department is devoted to collections of relics from which the student can trace the traditions and history of the Hungarian nation's rise.

Among the most important art galleries in Europe today, the National Hungarian Museum of Fine Arts takes proud stand, and deservedly. Works of the greatest masters of all times and of many nations are gathered here.

Giorgione, Raphael, Gentile Bellini (Italian), El Greco, Ribera, Goya (Spanish), Rubens, Van Dyck (Flemish), Rembrandt, Vermeer, Franz Hals (Dutch), Durer, Altdorfer, Hans Baldung Gien (German), Reynolds, Hoppner, Raeburn (English), Claude Lorrain (French), and, of course, many others of which we did not get a glimpse in a hurried inspection.

Naturally the Hungarian section of the museum is more complete than the foreign sections, and exhibits the works of Victor de Madarasz, Bertalan Szekely, Karoly Lotz, Mihaly de Zichy, Lajos Deak-Ebner, and Jeno de Gyarfas.

The Hungarian National Museum of Applied Arts houses a magnificent collection of textiles in the form of old Hungarian embroideries, and Gothic and Renaissance Italian velvets. Ancient Hungarian earthenware, European porcelains, Hungarian silverware and jewels also are displayed here.

On an island in the City Park lake is the Royal Hungarian Agricultural Museum. The building itself is a combination of Baroque, Gothic, Roman and Renaissance styles, but isn't the monstrosity you might think. Showing every phase of Hungarian agricultural life, it's well worth careful examination.

There's the agro-geological section, containing endless samples of Hungarian soils; the plant pathological section, showing the various parasites which damage the Hungarian crop; an agricultural statistical division, a seed section, a huge plant-growing room, a tobacco-room, a gardening section, a bird-and-egg collection, an agro-historical section, a meteorological division, a model collection, a dairy section, a horse breeding department, a sericultural section, a forestry department, a fishery depart-

(*Concluded on Page 10, Column 1*)

Beauty, Both Animate and Inanimate, to Be Seen Everywhere in Budapest

1. Waiting for a bus to St. Margaret's Island, Budapest's lovely park on the Danube. 2. Corner of the munificent Hotel St. Gellert. 3. Hungarian posey peddler. Small margins of profit make her living meagre and precarious. 4. Typical Budapest architecture. 5. Here is a Hungarian girl of the true type—dark, flashing-eyed, strong visaged, and knowing.

Southern Wholesalers Handles Leonard in Baltimore

BALTIMORE — Southern Wholesalers, Inc. has been appointed distributor for Leonard electric refrigerators in this territory. Identified with refrigeration field for a number of years, the company until recently was Kelvinator distributor here.

William E. O'Connor is president of the company; Arthur H. Brandt is manager of the refrigeration division; Earl Rannells is manager of the apartment house division; and William H. Lewis is manager of the company's Baltimore division.

New Store to Retail Domestic & Commercial Lines

SACRAMENTO, Calif.—H. F. Hart and Don Gordon have opened a new Kelvinator sales store here, at the corner of 13th and J Streets.

A complete domestic line and various types of commercial equipment is displayed in the showrooms. Mr. Hart handles the domestic business, while Mr. Gordon takes care of commercial orders. Both men have had considerable experience in the refrigeration field.

Reeves Joins Range Sales Division at G-E

CLEVELAND—Newest addition to the range sales division of General Electric Co. is C. A. Reeves, who was formerly range specialist with Rex Cole, Inc., New York G-E distributor.

After graduating from St. Lawrence University, Mr. Reeves took a training course at the Edison Lamp Works of General Electric Co. He was then appointed to the Denver office, where he was employed as salesman and general contact man for the Rock Mountain division from 1925 to 1929.

Transferred to the general office in Harrison in 1929, Mr. Reeves was later appointed to the syndicate department of Edison Lamp Works, where his work consisted of contacting holding and operating companies in New York.

He became associated with Rex Cole, Inc. in 1936.

Kelvinator Opens New Building for Detroit Branch

DETROIT — President George W. Mason of Nash-Kelvinator Corp., executives of the Kelvinator division, and representatives of business and financial interests in the Detroit area attended the formal opening Friday of the new home of Kelvinator's Detroit branch, 4809 Woodward Ave. at Hancock.

The new location comprises three floors, first two of which house the branch's display rooms, service department, and offices. The third floor will be used for warehousing purposes.

Separate showrooms are provided for display of domestic refrigeration, ranges, laundry equipment, automatic heating, and commercial refrigeration equipment. Showrooms are decorated in modern motif. Offices and showrooms are completely air-conditioned with a system of 40 tons capacity.

John W. Smith, president of Detroit Common Council, officiated at Friday's dedication cermonies by tacking up over the entrance a horseshoe from the hoof of Bold Venture, 1936 Kentucky Derby Winner.

Kelvinator factory and advertising agency heads present, besides Mr. Mason, were: H. G. Perkins, W. R. Crossett, Pierre Miles, E. L. Sylvester, E. A. Seibert, Campbell Wood, B. B. Geyer, chairman, and H. W. Newell, vice president of Geyer, Cornell & Newell, Inc.

Business leaders attending the opening included Roy Duncan, William Regan, Charles Keenan, and Ed Hacker, Detroit Edison Co.; S. Raimi, Central Stores; F. W. Hackett, Good Housekeeping Shop; J. B. Ogden and L. F. Johnson, J. L. Hudson Co.; Walter McLucas, National Bank of Detroit; Joseph M. Dodge, the Detroit Bank; and Edwin S. George, Woodward Ave. Improvement Association.

Executives of the local Kelvinator branch are: R. W. Walsh, manager; Ralph A. Day, assistant manager; R. T. "Cy" Perkins, metropolitan wholesale sales manager; G. N. Coombs, credit manager; R. E. McGurn, auditor; Herb Eidt, domestic refrigeration sales manager; Harold Banbury, range sales manager; Leon Watson, air-conditioning and Kelvin Home manager; F. T. Schreiner, air-conditioning engineer; John Staples, commercial sales manager.

Roland Gies, automatic heating sales manager; L. E. Walters, advertising and sales promotion manager; John Hymes, purchasing manager; and Glen Taylor, service manager.

Territorial wholesale managers are James W. Taylor, Al Cadieux, and Max Wichman.

Cooperative Display Benefits Dealer and Utility

GREELEY, Colo. — A cooperative display planned by Home Gas & Electric Co., here, benefited both the utility and the store in which the display was placed.

The utility placed an electric refrigerator in a prominent spot in one of the busiest local stores, and the store then used it for the sale of frozen candy bars.

On top of the refrigerator was sign which read: "Why not preserve your food in your home with General Electric refrigerator? Convenient terms. A size and price for every family. Home Gas & Electric Co."

The utility, of course, loaned the display of Westinghouse appliances, featuring an all-electric kitchen; branch and divisional offices are located on the second floor. Remainder of the floor space will be utilized as a warehouse.

Preceding the formal opening a luncheon for Westinghouse appliance dealers was served at the Continental auditorium, after which the dealers viewed an exhibit of 1937 refrigerators and other appliances and inspected the new building.

Lester P. Philip is manager of the branch.

New Westinghouse Quarters Opened Jan. 5 in Newark

NEWARK—New quarters of the local branch of Westinghouse Electric Supply Co., located at McCarter Highway and Green St., were formally opened to the public on Jan. 5. The new building, four stories high, has a floor area of 36,000 sq. ft.

The first floor houses a permanent refrigerator without the charge.

Model Rooms to Show Norge Products in St. Louis

ST. LOUIS—Installation of a model electric kitchen, model furnace room, and laundry is being made in the Olive St. store of the Downtown Norge Appliance Co.

The kitchen will be equipped with a full selection of Norge electric kitchen appliances, including refrigerator and electric range. The Norge fine air furnace equipped with Norge Oilator oil burner is to be installed in the furnace room. William J. Lane is manager of the store.

MeLeod Directs Combined Copeland-Prima Forces

DETROIT—James E. McLeod, general sales manager of Copeland Refrigeration Corp., will direct the combined sales forces of Copeland and of the Prima Mfg. Co., Sydney, Ohio, washing machine manufacturing firm purchased by Dallas E. Winslow, Inc., parent company of Copeland, according to a recent announcement.

Associated with Mr. McLeod in charge of the Prima division will be Charles H. Collies, who has headed Prima sales for the past two years. W. G. von Meyer, long indentified with Copeland, will head the Copeland sales division.

Archer W. Richard, who has been directing operation of the Prima Co. during the past 20 months, will continue in charge of its management.

Free Service Stunt Gives Salesmen Leads

AUSTIN, Tex.—Free appliance service is the basis of a sales promotion stunt sponsored by Electric Appliance Corp., General Electric dealer here.

Every morning the company's salesmen cold canvass at least 20 homes. At each home they leave a printed tag on some electric appliance. This tag, identified with dealer name and address, entitles the owner to one free service call on that appliance.

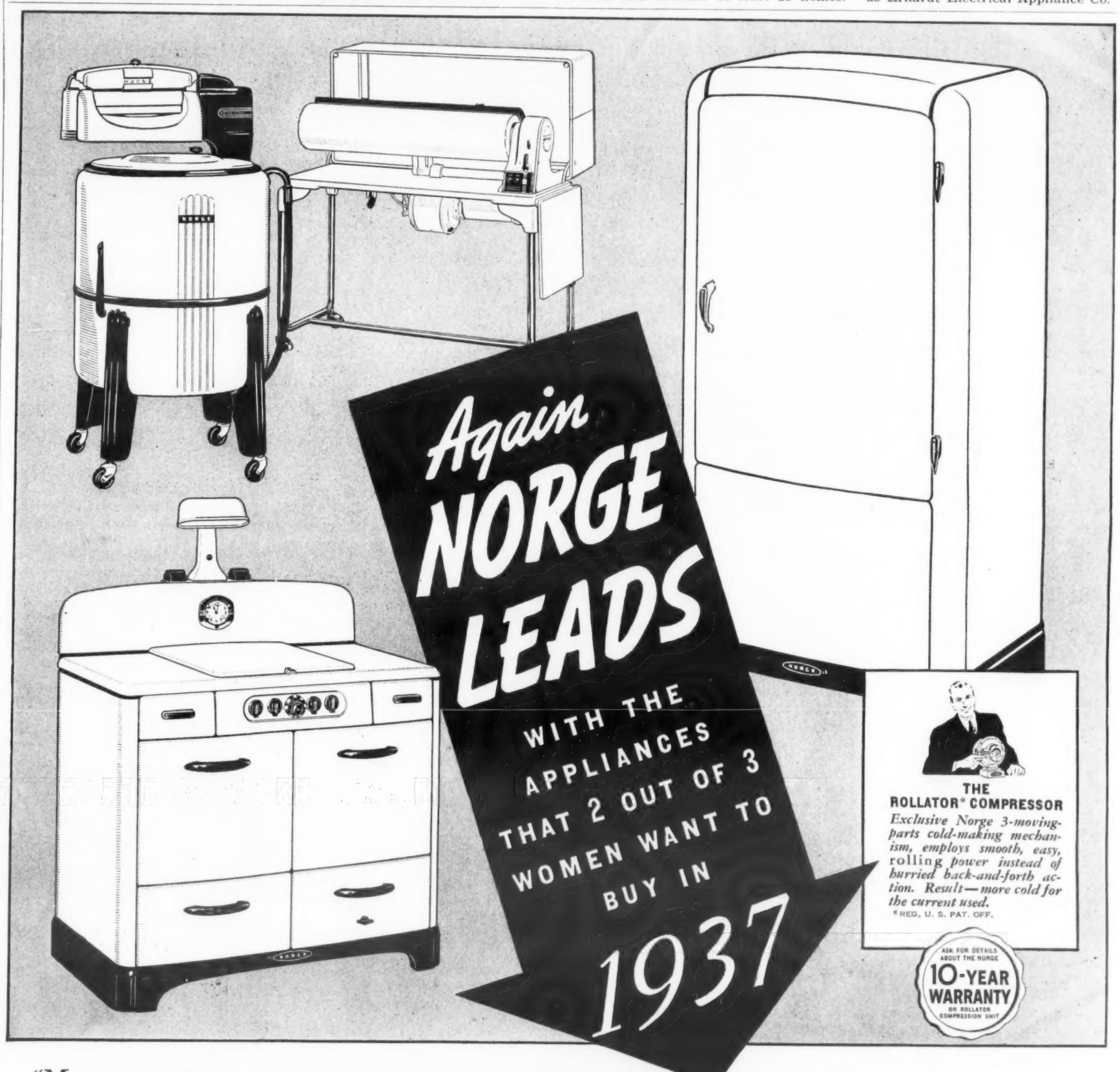
This stunt enables the salesman to learn what appliances the prospect has, and the condition they are in. It also puts the prospect in a frame of mind to talk about new appliances.

Smithers Made Sales Head For F. C. Hayer Co.

MINNEAPOLIS—H. B. Smithers, formerly with Atwater Kent and recently sales manager for W. M. Dutton & Sons Co., Hastings and Omaha, has been made sales manager of the F. C. Hayer Co., distributor of Electrolux, Gibson refrigerators, Meadows washers, and Erla and Admiral radios in this vicinity.

Erhardt Opens Appliance Store in St. Louis

ST. LOUIS—Retailing Norge refrigerators and electric ranges exclusively, a new electrical appliance store has been opened by E. S. Erhardt at 3503 N. Second St. it will be known as Erhardt Electrical Appliance Co.


Again
NORGE
LEADS
WITH THE APPLIANCES THAT 2 OUT OF 3 WOMEN WANT TO BUY IN
1937
THE ROLLATOR* COMPRESSOR
Exclusive Norge 3-moving-parts cold-making mechanism, employs smooth, easy, rolling power instead of hurried back-and-forth action. Result—more cold for the current used.
*REG. U. S. PAT. OFF.
ASK FOR DETAILS ABOUT THE NORGE
10-YEAR WARRANTY
ON ROLLATOR COMPRESSION UNIT

"MRS. AMERICA, *what do you want to buy next for your home?*" That was the question. And the thousands of answers prove that two women out of three are considering one of the four appliances sold by Norge dealers—refrigerator, range, washer, or ironer.

Further questioning as to makes of appliances preferred proves that Norge is among the leaders *in all four appliances.*

Women want new appliances. They want *Norge* appliances. Survey figures prove it—and Norge dealer *sales* figures prove it again. Write for details about Norge appliances and about the aggressive Norge advertising and sales promotion program for 1937.

Norge heating and air-conditioning equipment, featuring the Norge Fine-Air Conditioning Furnace, sets new standards of efficiency and low cost of operation. Get the facts. AP-2

NORGE DIVISION *Borg-Warner Corporation, Detroit, Michigan*

NORGE

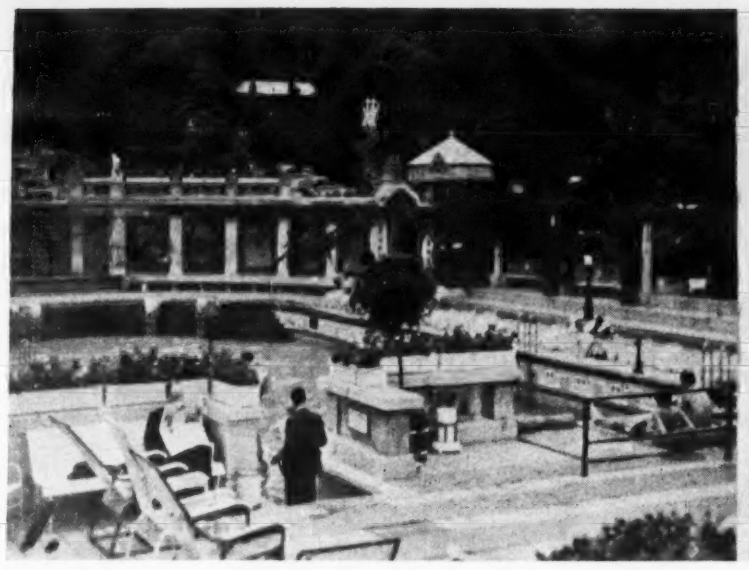
Plus Value

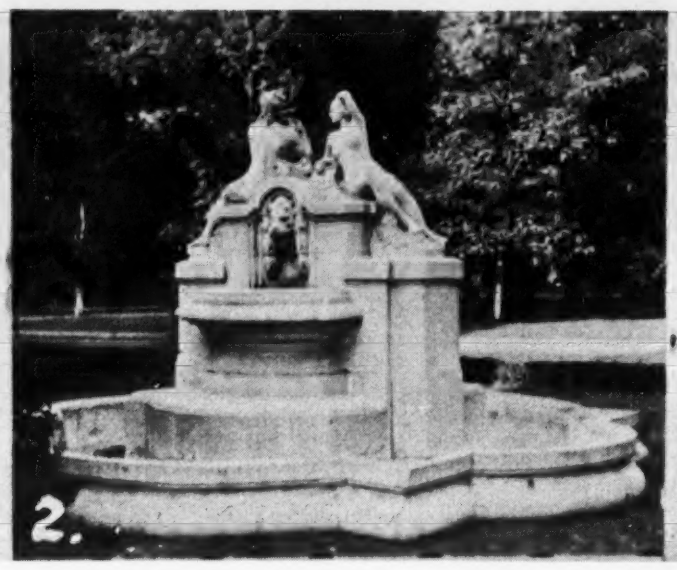
HOME APPLIANCES

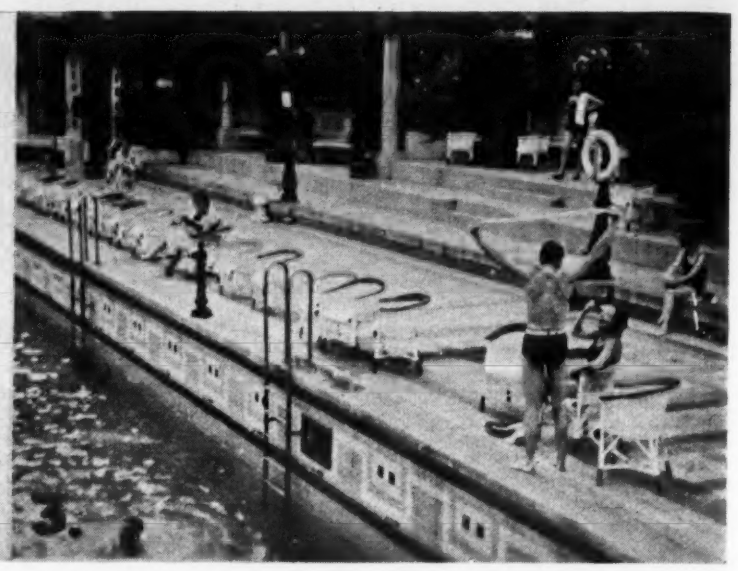
Every sale of a Norge Home Appliance is the first step toward another sale—and another profit. Moreover, each Norge appliance has vital distinctions—major selling points—that make it easier to sell. Year after year sees the Norge franchise a more valuable one. And 1937 promises to be the biggest year of all—by a wide margin. Liberal finance plans make it easy to be a Norge dealer. Get the facts.

ROLLATOR REFRIGERATION (Domestic and Commercial) • GAS AND ELECTRIC RANGES • WASHERS AND IRONERS • GAS BURNERS
WHIRLATOR OIL BURNERS • FINE-AIR FURNACES • COAL STOKERS • AIR CONDITIONING • CIRCULATOR ROOM HEATERS

'Taking the Cure' in Budapest's Baths Is An Experience in Luxury







1. Garden of the St. Gellert hotel, showing the lavishness with which Budapest's resort properties have been laid out. 2. Sculptured fountain on St. Margaret's Island. 3. Bathers enjoying the magnificent St. Gellert Surf-Bath, the water of which is agitated into artificial waves. This "bath" is a noted gathering places for continental society.

(*Concluded from Page 8, Column 5*) ment, and a "shooting section" with life-sized indigenous animals taxidermied into natural poses.

* * *

Lavender and Old Lace

In the very heart of Buda, which is picturesquely situated on a chain of hills, rises Fortress Hill, capped by the Royal Palace. The gateway is guarded by two huge lions depicting Hungarian hospitality. Don't laugh—here's how the Hungarians figure it: The one of the peaceful countenance is welcoming the visitor, and the other is protesting against his leaving!

Phases of the history of this Palace, of the kings of Hungary, is recorded on tablets over the gate.

To the right of this gateway is the mammoth Queen Elizabeth Museum—the only museum in the country dedicated to a woman, and the only one dedicated to a member of the royal family. It's a museum which should appeal to every woman. Why? Read:

In one room we find numerous likenesses of Elizabeth—portraits, photographs, busts, and statuettes—showing her in Hungarian gala costume, coronation dress, riding habit, street dress, evening dress, with her dog, and with her favorite horse.

Elizabeth's gifts from Hungarian cities are displayed in cases. Here are her prayer books, her saddle and bridle. In one case is the gown she wore in 1896 at her last official appearance in Budapest.

In another case you will find the dress she wore when she was assassinated at Geneva in 1898.

A special salon contains the furniture from Queen Elizabeth's study. The shelves are filled with her books, pictures of her children are distributed throughout the room, and replicas of her favorite flowers are on the table.

* * *

Coney Island

Paris has her Bois de Boulogne, London her Hyde Park, New York her Coney Island. Budapest has the Os Budavara. This great playground is beautifully kept. It has the usual conglomeration of swings, peep-holes, miniature circuses, small theaters, and food stands, but all neat to a degree you'd never believe possible for an amusement park.

The barker at the various side-shows must be quite a linguist. He rattles off his spiel in Hungarian, English, German, Slovak, Czech, and sometimes French, for patrons are apt to be polylingual.

The Park Club, on the Corso encircling the Os Budavara, in addition to being very exclusive, is exceptionally attractive. This club, with its tennis courts, flower gardens, and artificial grotto is a picture postcard come to life.

The remarkable collection of old silver and mahogany, damask embroideries and Louis XVI furniture on display in the clubrooms was contributed by Baron Atzel Bela.

Gathered around the little tables, sipping coffee, are to be found the social register of Budapest—branches of family trees which go 'way back to the cedars of Lebanon.

* * *

White Tie Places

An imposing building of Renaissance style, the Royal Opera House is in perfect taste, from the chandelier adhering to the frescoed ceiling to the graceful staircase leading to the foyer. Which—the perfect taste, that is—can't be said of many halls where the gilt-edge sopranos emote.

As do all theatrical performances in Budapest, opera begins at seven. Dress is not obligatory, but is approved. Normally, however, Budapest males pay little attention to attire.

The stage of the Royal Opera House is cut up in rectangular sections, each section being upheld by two steel shafts. Thus the sections can be raised, lowered, or turned to any angle. This intriguing mechanism is operated by the chief engineer from his box in the flies.

"Nemseti Szinhaz" (National Theater) is the Comedie Francaise of Budapest. Subsidized by the government, this ancient theater has played a large part in the life of Budapest—both social and political. Great orations were delivered from its stage during the Revolution.

Best bets for comic opera are the "Nepszinhaz" (People's Theater) and the "Vigszinhaz" (Comedy Theater). There are two summer theaters: the Fovarosi Arena and the Varosliget. Most important music halls are the Favarosi and Foli Caprice.

Coffee-houses in Budapest are as thick as beer gardens in Berlin. They are the public clubs of the people. Here all Budapest meets to talk business, read the newspaper, and play cards. The Hungarian drinks coffee as freely and frequently as the German drinks beer.

* * *

Music

Themes and strains of Hungarian folk-songs, which so admirably express the gypsy soul, have formed the nucleus for many symphonic compositions, particularly in the works of Brahms and Liszt. To the writer, it is the most appealing music which has come out of Europe.

Some of the most celebrated of the gypsy bands play in these spots. Made up of violin, viola, bass viol, cymbal, clavichord, and clarinet, and composed of musicians born with music in their souls, these men follow the improvisations of their leader with infinite empathy and insight.

The violin growls, it laughs, it sobs, it sings. As the gypsy draws his bow across the strings, you hear the sigh of the wind, a cry of distress, the crash of thunder, a gale of laughter, the roar of the sea.

Starting on a mournful note, thoughtfully, the leader (or "primus") may suddenly swing into a wild, fanatical outburst of torrential thirty-second notes; and then, just as unexpectedly subside into legato laments.

If you've been unlucky in love, or long away from home, you may weep.

In form, Liszt's "Second Hungarian Rhapsody" and Brahms' "Fifth Hungarian Dance"—with their sudden, unmodulated changes in tempo, and their contrasts of mournful minor passages with frenzied allegrettos—approach as closely to this inspired gypsy music as formalized, set-down-on-paper compositions ever have.

* * *

Magyar Character

Being lovers of nature and of life, the native Hungarians crave independence and peace above all else. The Magyar is a man of reserve and constraint in almost all his actions. Only in the dance does he "let himself go."

It should be remembered above all else that the Hungarian is an Oriental, onto which has been grafted European culture. He is by nature a lover of the open spaces; but Budapest, which has been a human habitation for thousands of years (including a period of glory under the Romans) has attracted more than a million of his race.

The sentiments and soul of a typical Hungarian are admirably expressed in this verse by Alexander Petofi:

A Magyar I: in mood, like all my clan,
A somewhat sad, reserved and sombre man,
Sad as the first chords from the viol drawn,
Preluding lament of a love forlorn.
The smile upon my lips is weak and faint,
My laugh is rare, and temper'd with constraint.
When joys unbounded in my heart arise,
Unbidden tears burst forth and blind my eyes.
I love not pity, and when sorrow-pain'd
I wreathe my face in merriment well-feign'd.

Hungarian girls are inordinately beautiful and, like Hungarian music, wistful and pliant. Look into the face of a Hungarian girl, listen to a few bars of *czardas* music, and you'll come closer to an understanding of the Maygar temperament than months of study of statistics and reports could bring you.

* * *

Tourist Stops

Two most interesting places to visit in Hungary are Lake Batalon and the Puszta of Hortobagy. The former is the largest lake in Central Europe, if not in all Europe, and the latter is the greatest of the vast Hungarian plains.

Lying some 50 miles southwest of Budapest, Lake Batalon is a long, narrow body of water with an area of 230 square miles, a shore-length of about 43 miles, and an average depth of only nine feet. To thousands of Hungarians it is paradise, a spot to bask in the warm sun and loll in the tepid water.

Batalon is excellent for sailing and fishing, and on its shores are many summer homes and cottages. The Ichthybiological Institute of Hungary is located on the lake.

The Puszta of Hortobagy is an immense plain just outside of the city of Debrecen in the eastern section of Hungary. Of its area of 100,000 acres, 12,000 acres are given over to agriculture, 5,000 are covered with ponds breeding carp and other fish (by the millions!) and the rest, some 83,000 acres, is pastureland for thousands of cattle, horses, and sheep.

Life on the Puszta, though monotonous, has its occasional periods of interest. On certain days in the spring and summer, for instance, there appear on the horizon amazing mirages disclosing pictures of churches, castles, flocks of sheep, herds of cattle, and Got wot else.

Such phenomena strike the plainsmen "right between the eyes," and are his most notable diversions.

* * *

Difficult Language

The Hungarian language is an offspring of the Finnish-Ugrian branch of the Ural-Altaian group.

That sounds forbidding, and it is—that language. It's as tough to learn as any tongue in the Occident. The writer couldn't master even the simpler, most-necessary phrases. And as for reading it . . . well, even when Hungarians write English you can't decipher their letters.

It is a rhythmatic tongue, the accent being placed on the first syllable. The pronunciation is rather harsh, but the variation in sounding the vowels and consonants makes the effect musical. Written records of the Hungarian language date back to the ninth century.

An economical language, Hungarian has few more than 120,000 recognized words. Shades of meaning are attained by grammar, and by a complicated system of prefixes and suffixes, all of which add to the difficulties of mastering it.

Isolated in the midst of peoples speaking Latinesque Indo-Germanic tongues, the Hungarians have presented the strength and purity of their Asiatic philology down through the centuries. Most European languages contain similar words and phrasings; but only a Turk or a Finn could recognize anything familiar about Hungarian talk.

* * *

Hungarian Money

Divided into 100 fillers, the Hungarian monetary unit, the pengo, has a par value of about $0.2961.

Although there are no prohibitions on their importation, foreign notes are not in circulation in Hungary. There is a limited usage of checks.

The National Bank of Hungary is the sole note-issuing authority. The entire amount of National Bank notes in circulation, plus the demand liabilities, and minus the State debt, must be covered to the extent of 24% until 1938 and after that to the extent of 33.333%. The metallic reserve includes foreign currencies, foreign exchanges, and token money.

Liabilities based on commercial transactions that are payable in gold or gold coins may be legally satisfied by the debtor by offering pengo currency. However, the creditor need not accept such payment, postponing it.

TAG Snapon Controllers
FOR REPLACEMENT profits

For Domestic Refrigerator, Water Cooler and miscellaneous applications, TAG Snapon Controllers fit your service jobs perfectly and profitably for you. Once adjusted, they positively retain their temperature setting. Once set, the mechanism is locked against creeping. Send for the new 1937 TAG Snapon Controller Catalog No. 1136-25 . . . it contains other test equipment for refrigerator service that you should know about.

C. J. TAGLIABUE MFG. CO.
Park & Nostrand Aves.
Brooklyn, N. Y.

Send for CATALOG

Gentlemen: Please send me a copy of the new 1937 TAG Snapon Controller Catalog No. 1136-25.
Name.....
Address.....
City & State.....

This Booklet
DESCRIBING THE
9100 LINE
for COMMERCIAL REFRIGERATION
Is Yours for the Asking

This condensed catalog gives a full description of *Square D's 9100 Line* of Regulators for commercial refrigeration controls of the pressure, vacuum and temperature types.

This booklet will be mailed to you, postage paid, if you will merely fill in the coupon below and mail this advertisement to the Square D Company, Regulator Division, Detroit, Michigan

Export Dept., Regulator Division, H. M. Robins Company, 120 Madison Avenue, Detroit, Mich.

Check Classification
☐ Serviceman
☐ Dealer
☐ Jobber
☐ Mfg.

Square D Company, Regulator Division
6060 Rivard Street, Detroit, Michigan
Please forward without charge the Regulator Catalog described in this advertisement.
Name_____
Street & No._____
City_____ State_____

In answer to AN INQUIRY

WHEN the mail brings an inquiry from a live prospect, it commands immediate attention and gets quick action. Things begin to happen. Somebody writes a carefully worded letter to win favorable attention and to build good will, and a catalog is mailed to get the order.

If the letter and catalog click, a new account appears on the books. Most sales executives place a high value on new accounts. The initial order may furnish no occasion for building a new factory or putting on a night shift, but the potential volume of business over a period of time from a new account is always attractive. The actual value of a new account can only be estimated, but possible future profits make such business highly desirable. Sales executives appreciate that.

No one questions the soundness of business judgment in sending a catalog in reply to a really good inquiry for the purpose of opening up new business. And now comes a very rare opportunity in the form of the Deluxe Edition (first 5000 copies) of the Red Book.

This edition will be sent only in answer to inquiries from active buyers. It is planned to make new contacts; to open up new accounts. It is planned to be a business getter.

As headquarters for information pertaining to the air-conditioning and refrigeration industry, thousands of inquiries of all kinds come to the offices of the News. These are active inquiries. And now they are to be made available through the Red Book. ***In reply to live inquiries the News is sending a Master Catalog.***

In a program for developing new business, to miss the opportunity offered by the Deluxe Edition of the Red Book is like failing to answer a good inquiry. Plan to use the Red Book in your sales development plans for 1937. The first 5.000 copies (Deluxe Edition) will be distributed March 1. Prepare your advertisement at once.

Gilson Mfg. Co.
Gilson Products
Guelph, Canada

Gentlemen:

Would it be too much trouble for you to give us a list of makers of domestic electric refrigerator cabinets, who are interested in supplying cabinets to manufacturers of high and low sides, to be sold under their own name?

R. K. DAWSON,
Vice President.

29131 Jefferson
St. Clair Shores, Mich.

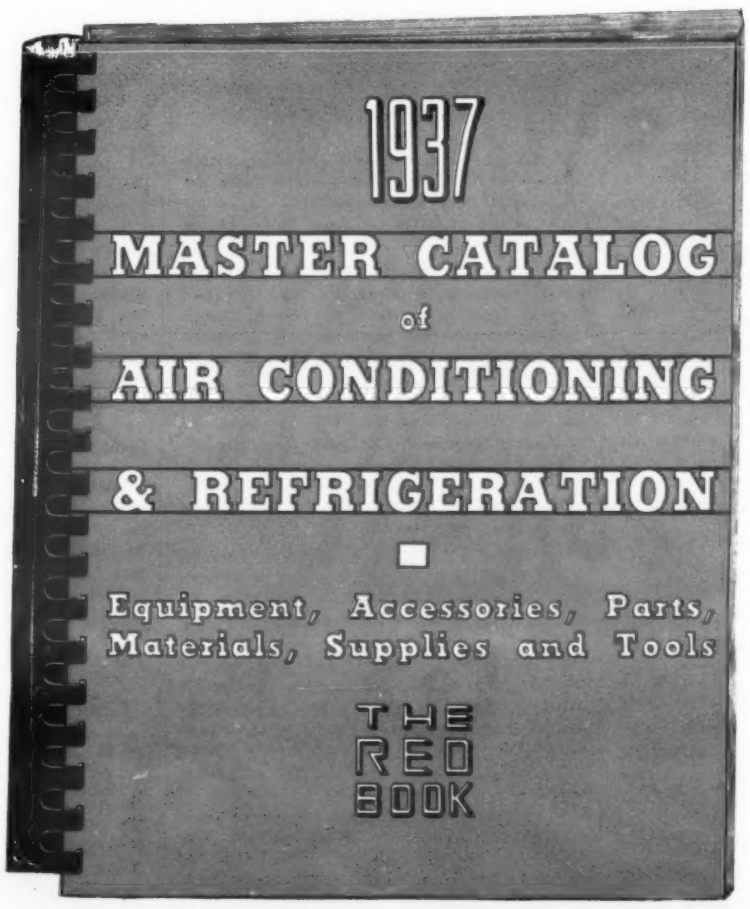
Gentlemen:

On or about March 1, 1937, I am opening a refrigeration sales and service shop.

In the meantime I will be doing considerable buying of refrigeration tools and small parts such as gaskets, etc. for household units.

For this reason I am desirous of receiving catalogs and price information.

Yours truly,
ROSS W. HAY.



The connecting link between those seeking new and additional outlets and those looking for new and better sources of supply.

Georgia Power Co.
Columbus, Ga.

Gentlemen:

We would like to obtain three copies of your "Master Catalog of Air Conditioning and Refrigeration" to be issued March 1, 1937, and trust that you can favor us with these copies.

M. E. MANN,
Division Sales Supervisor.

Mayer Body Corp.
Motor Truck Equipment
Pittsburgh, Pa.

Gentlemen:

We are herewith enclosing a card requesting a free copy of the Red Book.

Being manufacturers of refrigerated truck bodies using Dry Ice, Kold-Hold, and Dole systems of refrigeration, we feel that your Red Book would be of great value and assistance to us in securing the proper source of supply for various equipment used in the manufacture of such bodies.

WM. G. MAYER, President.

Business News Publishing Co.
Publishers of Air Conditioning and Refrigeration News
5229 Cass Ave., Detroit, Mich.
Advertising Representative: John B. Gallagher Co.—New York and Chicago

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Specialty Selling vs. Merchandise

FURNITURE men have begun to "wake up and live." Throughout the worst years of the depression, furniture buying on the part of the American public was at a low ebb. Style was sacrificed for bare utility. The promising modernistic trend seemed squelched, for the time being. Even the undertaking business, with which so many small-town furniture stores are associated, wasn't so good; for people didn't seem to die as fast when the depression was in force.

Into the middle of this woe-begone state of affairs came the electric refrigerator. For countless firms it was virtually a life-saver. It gave them a new interest in, and lease on, life. Here was something that people needed, and wanted, and were willing to go into debt to buy. And it gave furniture men an entirely new theory and technique to work with: specialty selling.

Firms like Leonard and Norge which pioneered the merchandising of electric refrigerators through furniture stores (Universal Cooler and Mayflower were also in on the early stages of the movement) brought their specialty selling technique along with them. Factory and distributor representatives came to these new dealerships armed with direct mail literature, with promotional stunts, and with sales training material for salesmen. Furniture stores were initiated into the rites of outside selling, of door-to-door canvassing —an idea previously considered repugnant to the trade.

For a long time the furniture stores accepted this regime unquestioningly. Refrigeration had helped them out of a tight hole; they were all for it, and its methods. They played the game according to the rules: sold nationally advertised makes, refused to cut prices (for the most part), entered the contests, followed the general plan. As a group, they were much less temperamental, much more inclined to be conformists, than the department stores.

But the scene is changing.

At Chicago right now several thousand representatives of the furniture trade are engaging in the most exciting, hell-bent-for-leather exhibition and get-together most of them can remember. During 1936 the furniture business, as such, came to life with a bang. And all indications point to one of the biggest seasons for home furnishings—and refurnishing—in 1937 that the trade has ever enjoyed.

The modernistic motif, the development of which was arrested for a period, has been resuscitated, and is now running forward at a headlong pace. New materials, new designs are in high demand. Hollywood's "blond" furniture (created out of necessity, so the story goes, as a background for Fred Astaire's flying tail-suits) has entered the picture, along with crystal, chrome, angles and functionality.

People want something new, something different. It has become a *buyer's market*, one which the furniture manufacturing industry —alert, creative, and pent-up with hitherto unreleased designs developed during the slack days of the depression—is rushing to fulfill.

As a result, many furniture dealers are beginning to get a little high-hat about this specialty selling idea. What they now want, many of them are declaring in informal discussions of refrigeration, is *new merchandise.*

"Nothing really new has come along in refrigerator design for the last three years," stated one buyer who was airing his opinion in a little group at Chicago's huge Furniture Mart. "Streamlining, with minor deviations, tells the whole story of electric refrigerator appearance today.

"In the buyer's market which is now blossoming into being, people are looking for something new. People are now coming into our stores 'just looking' for new ideas in home furnishings. For some years now they have been spending much more time at home than they did formerly. They are tired of looking at the same objects. They want to show off their increased incomes to the neighbors. An original idea will sell itself today.

"For example: Why must we always go out to the kitchen for a cold bottle of beer or wine? How about a beverage cooler for the *living room*, finished in wood, say, or to match a new set of modernistic furniture. Something like that might serve as a 'clincher' in the sale of a complete new living room suite.

"Some of these matched-appliance kitchens, with backgrounds of Monel metal, glass brick, unfinished maple, and the like, are approaching the idea we're trying to get at. Do all refrigerators have to be finished in gleaming white? How about something unobtrusive for a change? Or something in chrome, or black? You'd be surprised what people will buy these days. We are entering an era of design which is decidedly not conservative."

And so the conversations went. There were rumors of stores joining buying groups to obtain private brand merchandise, styled by their own designers. There were other stories going the rounds of furniture stores cooperating with manufacturers to finance the erection of "modern homes" in which new ideas in furnishings and decorations could be displayed to the public.

As yet it's too early to predict just what trend all this commotion in the furniture trade will take. About all that can be said is that there is more activity and excitement in the ranks than has been displayed for a long time, and that if appliance manufacturers and distributors don't take cognizance of it, they may find themselves with new problems on their hands.

Outlets which employ specialty selling methods will no doubt continue to do the bulk of the appliance business. But furniture stores which now consider themselves too busy to concentrate (and specialty selling requires concentration) on "outside" salesmanship need not be abandoned as dealers. They are offering a market for pioneers in design, for those who have original ideas and want to market them.

"Give us new merchandise," they say, "and we'll give you the customers for it."

And therein lies an opportunity —for somebody.

- LETTERS -

Specifications as Soon as Data Is Available

Stewart-Warner-Alemite Co.
2425-31 McGee Trafficway
Kansas City, Mo.

Editor:

Will you publish again sometime this spring in REFRIGERATION NEWS complete specifications on all household electric refrigerators, as you have in the past?

P. P. RICHMOND,
Sales Manager.

Answer: Specifications of 1937 models of household refrigerators will be published just as soon as the data for all leading makes is available.

A Correction on Mr. Trautwein's Status

W. F. Schaphorst
45 Academy St., Newark

Editor:

Refering to the article which I wrote and which you edited and published on page 17 of your Oct. 7 number under the heading: "Trautwein & Hendrick Prominent in Early Carbondale History," it appears that my original manuscript was misunderstood and a misstatement was made. The article says:

"Trautwein, who had been in charge of installations of air-conditioning mechanism for the Continental Iron Works of Green Point, N. Y., resigned his position with that company in 1889 and became superintendent of Hendrick Mfg. Co. of Carbondale, Pa."

Mr. Trautwein had not been in charge of air-conditioning installations. He was in charge of building the machines for the Continental Iron Works. The installation work was performed by Pontiflex.

W. F. SCHAPHORST.

Even the French Government Is Worried

Republique Francaise
Ministere des Travaux Publics
French Government Tourist Bureau
La Maison Francaise
610 Fifth Avenue, New York City

Dec. 29, 1936

Editor:

From various sources, governmental, commercial and social, your article on France in the November 4th issue of your publication has been brought to my attention.

As director of the French Government Tourist Bureau in the United States, I must express my deep disappointment and surprise at the viciousness of your references to the French people. Indignant protests from your readers here and abroad have reached me, resenting acutely such terms as "a den of thieves"—"robbery by night" —"gyping the American"—and other derogatory references concerning the integrity of the French people toward American visitors.

A trade magazine such as yours is published for the interest of business people, presumably now anxious to build good will and friendly trading relations between France and the United States. Such an ungracious public expression of your viewpoint toward the people you apparently found important enough to visit extensively is not only questionable taste but rather unfortunate bad business manners, it seems to me.

What would your reaction be toward a French journalist who visited Detroit, a thriving busy city, full of decent, hard-working people and then, after his return to France, began the story of his impressions of Detroit by naming it "The Kidnapers' Paradise," particularly is such words appeared in a technical magazine published by silk manufacturers or wine producers. You would feel, as we do, that such a journalist had caused needless hurt and business prejudice and had undone much earnest effort to establish cordial understanding and friendship between two nations who need each other.

As a Frenchman living in the United States, may I respectfully suggest to you that seemingly taxi-drivers, porters, doormen and ushers are much alike the world over. The language may be different but the general idea seems to be the same in every land.

If on a trip to Detroit I must tip the railway porter . . . at least $1.00 . . . a Redcap another $.25 or $.50 to carry *one* bag one-half a block . . . the taxi-driver a tip usually 25 to 33% of the charges . . . another bell-boy to carry my bag into the hotel and eventually to my room, I do not feel for one moment that I am being discriminated against because I am a visitor in Detroit. I know that everyone around me is doing the same thing and I would therefore feel that I was being most unjust to the charming people of Detroit who have made it such a successful city, if I were to allow the porters and taxi-drivers to be representative of my impression of their hospitality.

So far as the price of cigarettes may be concerned, may I respectfully call to your attention the fact that if you wished to buy American brands only across the river from where you are reading this letter—Windsor, Ontario—you would be charged $.45 for a $.15 package of American brand.

Foreign visitors in the United States pay city sales taxes on most of the merchandise they buy, on theater tickets, drinks, meals, federal taxes on transportation, on telephone calls. Hotel rates and entertainment, far higher than those of France, are paid for without quibble or question by the French visitor who enjoys to the fullest, the beauty and interest that the United States has to offer.

The objective of the French Government's Department of Tourism is to promote a feeling of the finest friendliness and hospitality to welcome our honored guests from the rest of the world, and particularly, the United States. Just as the charm of your world is its newness and modernity, the charm of France, as the art and holiday center of the world, is its ancient customs and traditions.

These cannot be changed quickly; they have endured too long, but if the visitor there will try, with just a little understanding, to accept whatever minor difficulties that arise because of different racial habits of thought and training, we feel that it would add greatly to the enjoyment of their visit and to the friendliness and good will between the two nations.

It is in the hope of creating a better knowledge of travelling customs prevalent throughout France that the French Government Tourist Bureau has prepared various brochures containing authentic and up-to-date information to protect the visitor against overcharging. These are printed in English and cover practically every problem which the inexperienced traveler in France might find. I am taking the liberty of forwarding one or two of these to you and shall be happy if they are of interest to you.

It is a great pity that the opening paragraphs of your very comprehensive article on Paris should undo so much of the value of the interesting and enjoyable description of your visit there. It is the really sincere effort of the French people as a nation and our organization as a means to convey to the visitors of France our heartfelt wish that our visitors be well-treated and happy.

I am taking the privilege of enclosing a letter from Mrs. C. S. More, a most distinguished American woman of unquestioned social and cultural standing, who, after having lived in France for many years, and knowing the country well, expresses here her viewpoint as an American. We are most grateful to Mrs. More for her understanding of a situation which the French Government's Department of Tourism is making every effort to eliminate.

The Complaint Department of our Paris office, 27 Quai d'Orsay, as well as this one in New York, places its facilities at the disposal of anyone who needs or cares to consult them in regard to the slightest discourtesy or overcharging during their travels in France. Reports and complaints are welcomed, either verbal or written, but in all fairness to this department, representing the people of France, we should greatly appreciate the opportunity of knowing of them before they are published. HENRY D'ORNANO,
Director

* * *

An American Woman Defends the Parisians

To Monsieur d'Orano,
French Tourist Bureau,
Maison Francaise, New York

Monsieur:

Chance having brought to my notice an article in the Nov. 4 issue of AIR CONDITIONING AND REFRIGERATION NEWS entitled "Around The World With George F. Taubeneck," I was surprised to find repeated in the midst of a very intelligent discussion of conditions in France some of the outworn and rather unjust complaints about French life that one does not expect from the experienced traveler.

It does not seem necessary to take the time or space to refute every point in Mr. Taubeneck's "expose," but, selecting one outstanding item of his indictment, let us consider the subject of tipping. No one should, in my humble opinion, criticize the tipping system in a foreign country until he has returned as a traveler to his own country, to live in hotels, take strange taxicabs, go to night-clubs, meet and cope with expressmen, porters, and all the other fauna of travel. He might have a suprising eye-opener.

Naturally, if he lives in his own home, he sees nothing of this side of life, and naturally in France a foreigner does not live in his own home and does see it. So sometimes does the returning "native" who has long lived abroad. I defy any customs men, any porters, any "runners," any policemen, any taxi drivers, any expressmen, to afford a rougher welcome than is sometimes offered at the port of New York.

In any country, the customs, however strange they may seem to the visitor, are usually found to be based on reason, if looked at dispassionately and with knowledge. In hotels and restaurants in Paris, as perhaps elsewhere, the hat rooms and toilet rooms are separate concessions rented out to separate people who depend on their tips for their living. It may not be the best economic practice, but that is the way it is, and the foreigner cannot expect to escape the tips that the natives pay. Incidentally, to translate *"Pourboire, Monsieur, pourboire,"* as "Tip me, damn you," seems manifestly unfair.

As matter of fact, ought not every irritating custom in a foreign land to be looked at with some attempt at understanding and then, if it remains irritating, forgotten? A sense of proportion is a good traveling asset, and what do these details matter in the whole impression? Yet the editorial mention of them does matter. Once seen on the printed page, they stick in the mind like a burr and set up a disproportionate amount of irritation. Fretfulness between nations is as destructive of cordial relations as fretfulness between individuals.

Mr. Taubeneck also complains of the difficulty of getting along in France without a speaking knowledge of the French language. This grievance is absurd on the face of it. Imagine what might be the "exasperation and embarrassment" of a Frenchman arriving in the United States with no knowledge of the English language.

If goodwill between nations—so ardently advocated by America and Americans—is to be maintained, might not returning travelers better praise and let the irritating detail go?

C. S. MORE

* * *

Vive la France!

News Release from French Government Tourist Bureau, Hall Kane Clements, Publicity Representative, 610 Fifth Ave., New York

PEOPLE OF FRANCE UNITED IN EFFORTS TO ELIMINATE OVER-CHARGING OF VISITORS

The French people themselves sent in 52% of all the reports of discourtesy and overcharging on the part of hotel keepers, taxi drivers, porters and railway employees throughout France, according to the first six-months' report of the Claims and Adjustments Department of the French Government's Department of Tourism, just received by Henry d'Ornano, Director in the United States.

Which indicates a very definite cooperation on the part of the French nation in a program toward developing more perfect service for its holiday visitors. The American visitor in France was responsible for only 21% of the complaints, the British for 8% and the rest of the world for the other 18%.

The complaints are made either verbally or in writing directly to the French Government Tourist Bureau, 610 Fifth Ave. or to the Reclamation Department of the French Government Department of Tourism, 27 Quai d'Orsay, Paris. They are then carefully investigated and when overcharging is proven, the difference is refunded to the complainant. The individual or organization against whom the complaint is made, is fined and warning given against repetition of the offense.

Authoritative information on hotel rates, customary tipping, customs, luggage, railways and other data, published in English is being widely distributed to prospective visitors to France by the French Government Tourist Bureau. The recent report shows that 60% of the complaints are due to the visitors' misunderstanding of French habits and regulations.

* * *

The Editor Speaks

The editor did not just go to France and back. He arrived there on the fifth month of a world tour, and his impressions were largely *comparisons* with the treatment accorded travelers in other lands.

It should be noted that in Detroit the editor lives in a hotel, that he spends much of his time traveling over the country, and thus is in fair position to judge what happens to those who journey in this nation.

The policy of the NEWS is to report the facts, favorable or otherwise, as we find them.

THE EDITOR.

York Gets Contract for State Hospital Installation

WORCESTER, Mass. — York Ice Machinery Co., 200 Causeway St., Boston, has been awarded the contract for installation of refrigeration equipment in the power plant of the State Hospital here. The contract price is $11,874, and the work is being done for the state Department of Mental Diseases. Plans for the project were prepared by W. & L. Engineering Co.

Landers, Frary & Clark Make Extensive Alterations

NEW BRITAIN, Conn. — Landers, Frary & Clark has awarded a contract for extensive alterations at its Ellis street plant here.

The work will consist of connecting two present buildings and will call for removal of a wall on the third, fourth and fifth floors. There will be new masonry and steel construction.

Concord Distributor Makes Farm Applications

CONCORD, N. H.—Installation of a WE-200 Servel machine and an HC-49B Humidraft has been made in Coos County Farm, West Stewartstown, N. H., reports H. E. Humphreys, Servel distributor in this territory.

Mr. Humphreys also has installed a 1½-hp. machine and two HC-49B Humidrafts in two walk-in coolers at Stoneleigh College, Rye Beach, N. H. At Manchester, the company took out a 1½-hp. unit connected to an 8 by 8-ft. walk-in box, added 16 ft. of double duty meat cases, and cooled the equipment with a ¾-hp. water-cooled Servel machine. The flooded coils were removed from the walk-in cooler, and an HC-49B Humidraft installed.

A model D-100 unit has been installed by Mr. Humphreys' organization to cool a 7 by 9-ft. box and 800 quarts of milk per day. Another installation consists of a WD-100 with two HC-49B Humidrafts.

Mr. Humphreys believes that forced convection cooling units will rapidly replace conventional coils. "Since we began installing forced convection units here about four years ago," he says, "we have installed only three overhead conventional coils."

Wyatt Represents Servel In Canadian Territory

EVANSVILLE, Ind.—W. T. Wyatt, field representative for Servel, Inc., has been appointed sales representative for the Canadian territory with headquarters in Toronto.

Puro Filter Opens Factory Sales Branch in Newark

NEWARK—Puro Filter Corp. of America, New York City, announces opening of a branch office at 34 Park Place with J. J. Heery in charge.

COMMERCIAL REFRIGERATION

G-E Conducts Product Service Meeting

FORT WAYNE, Ind.—Fort Wayne Works of General Electric Co. here was the scene, last month, of a series of three commercial product service schools, each lasting four days.

They were conducted by the company's product service division under the general supervision of J. H. Stubbs and were attended by General Electric product men from Cleveland, Fort Wayne and Schenectady, and by distributor, dealer and utility service men from throughout this country and Canada.

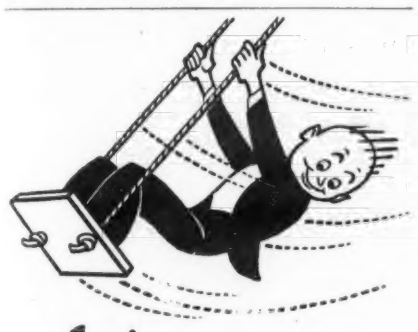
Work at the commercial product sessions consisted of informal discussions in which the latest developments and latest service methods in the commercial refrigeration field were presented.

That the schools were considered a success was evidenced by the letters received subsequently from the attending field men. It is planned to make the schools an annual activity.

Among the registrants was R. W. Sutton, International General Electric Co., Paris, France. Representatives of outside companies in attendance were: G. E. Lewis and R. H. Luscombe, Penn Electric Switch Co.; D. D. Wile, Detroit Lubricator Co.; A. F. Hoesel, Peerless Ice Machinery Co.; Dean Seitz, Russ Soda Fountain Co.

Texas Dealer Moves To Larger Quarters

LUBBOCK, Tex.—Armstrong's local Kelvinator and General Refrigerator (Lipman) dealer, has moved into larger quarters at 1109 Main St. here. The company maintains a day and night service department for all makes of electric refrigerators.



Swing OVER TO
SURE PROFITS!

No Repair Problems To Worry You With COOLERATOR!

Every time you sell a Coolerator, you keep the *entire* profit on that sale. You never need spend a penny of it for service. For this amazing air-conditioned ice refrigerator has no machinery, no moving parts to get out of order. What's more Coolerator is easy to sell. Here's why:

- **PRICED LOW:** Big family size only $79.50. Others as low as $39.75.
- **NEW FEATURES:** Completely air-conditioned . . . no danger of mingling food flavors . . . no rapid drying out of foods . . . beautiful "swingline" cabinet . . . ice cubes in 5 minutes.
- **PROVEN SUCCESS:** Backed by powerful national advertising, already more than 300,000 Coolerators have proud owners.
- **COMPLETE LINE:** From compact 2½ cubic foot size to spacious 50 cubic foot commercial model.

Want more facts? Write, wire, phone: **The COOLERATOR CO., Duluth, Minn.**

Swing OVER TO
Coolerator
The Air Conditioned Refrigerator

McCray Men Hear Plans for '37 at Annual Meeting

FORT WAYNE, Ind.—One hundred and fifty McCray branch managers and distributors saw new models for 1937 and the methods used in their manufacture during the company's national sales convention here Dec. 28 and 29. R. J. Rehwinkel, general sales manager, introduced the new models.

Speakers at convention sessions included J. A. Wordham, business analyst of Decatur, Ill., and W. J. Hannon, business manager of **Club Management** magazine.

Carl W. Dipman, editor of **Progresive Grocer** magazine, in an important convention address, outlined the importance of refrigeration in food merchandising and store arrangement. Pointing out that food sales have increased 22% from 1933 to 1935, he stressed the importance to the modern food store of carrying perishables, and cited statistics to show that consumption of fruits and vegetables has increased 70% during the past three years.

The speaker stressed the part modern refrigeration plays in carrying out cleanliness, variety, and quality of stock, as well as attractive open displays, all necessary in the successful food store.

Other speakers were J. W. Hart, secretary; J. T. Wessell, T. J. Murphy, V. C. Knight, E. D. Halsey, and Charles Stoll, district sales manager; I. Wolf and F. I. Davison, branch managers; W. V. Herr, collection manager; and G. J. Hopkins, chief engineer.

The convention closed with a tour of McCray's Kendallville factory.

In an address by R. E. Davis, treasurer of the company and vice chairman of its executive committee, he briefly explained the reorganization of the company since Mr. Stewart's death, the theme of his talk being "A New Deal by Old Dealers."

In his address of welcome, Mr. Rehwinkel stated that the aim of the selling organization is to increase sales 33⅓% during 1937 over the 1936 volume.

Mr. Rehwinkel also announced plans for six regional sales conferences to be held during January and early February at Atlanta, Dallas, St. Louis, Columbus, New York City, and Toledo. All McCray men in the respective districts will be invited to these conferences.

Eleven New Distributors Appointed by York

YORK, Pa.—Eleven new distributors of commercial refrigeration and air-conditioning equipment have been announced by the commercial division of York Ice Machinery Corp. They include:

Milburn Refrigeration Co., Kalamazoo, Mich.; Seuser Co., Albert Lea, Minn.; York Refrigeration Products Co., Lansing, Mich.; Payne Motor Sales Co., Danville, Va.; Edward Joy Co., Syracuse, N. Y.; Charles C. E. Harris, Boston.

Johnson Furniture Co., Shreveport, La.; Refrigerating Equipment & Service Co., Santa Rosa, Calif.; R. M. Wolf Co., Lincoln, Neb.; Household Appliance Co., Sioux City, Iowa; Sheldon Gordon, Wilmington, Del.

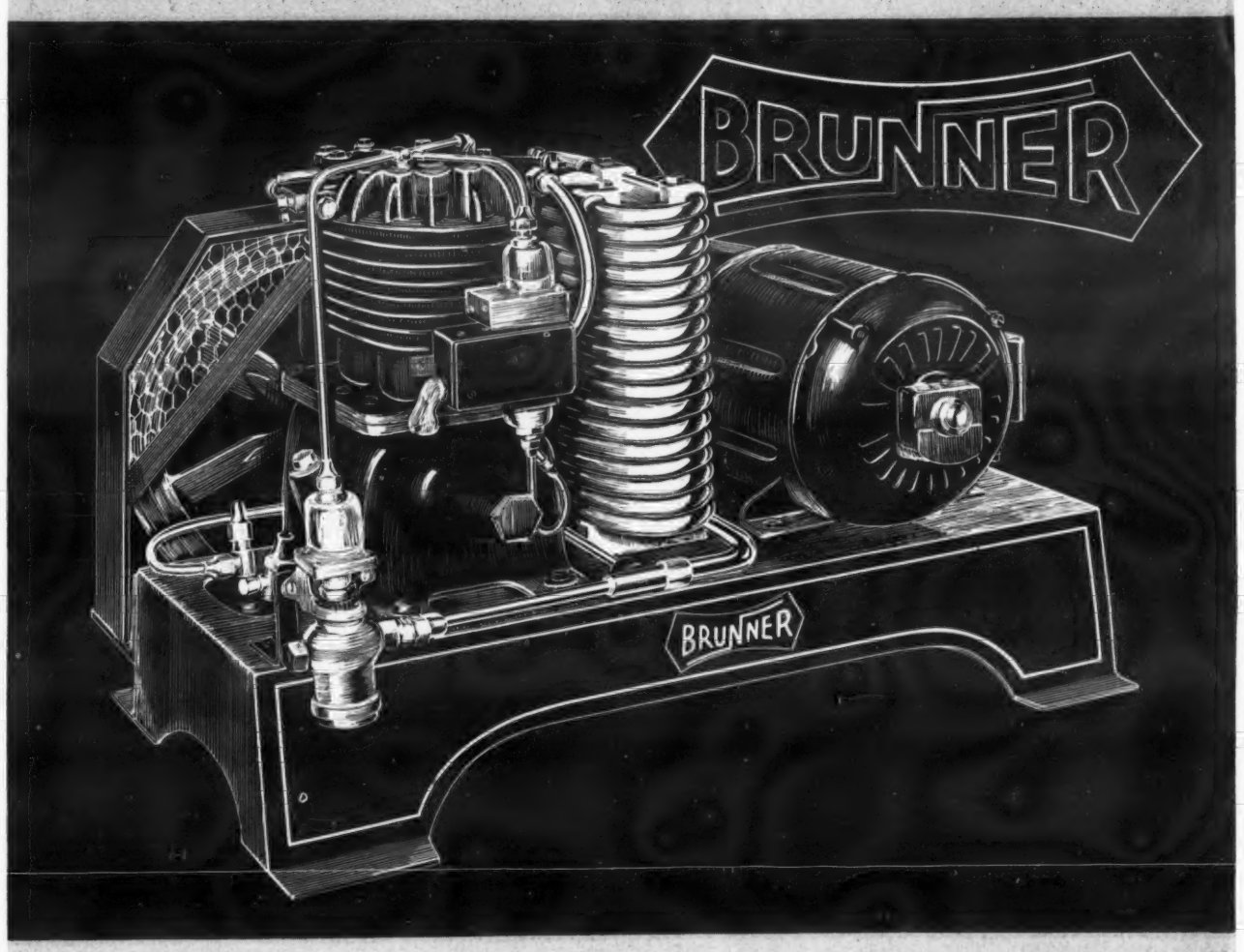
1936 Taylor Freezer Sales More Than Double 1935

BELOIT, Wis. — Sales of Taylor Freezer Corp. for 1936 were more than double those of 1935, according to Charles Shaw, advertising and sales promotion manager.

December was one of the year's three best months. Combined orders for December and January total six carloads, Mr. Shaw said.

Taylor Freezer officials attribute the gains to increasing acceptance of counter freezers, more aggressive advertising, and addition of several new dealers.

THE BRONZE BEARING FOR THE PISTON WRIST PIN IS ACCURATELY DIAMOND BORED TO INSURE PERFECT ALIGNMENT AND MINIMUM WEAR



Just a detail? Of course it is. Yet upon the precision and durability of the piston pin and bearing depend to a large degree the life of the refrigerating compressor. Here is an element taking a considerable number of rotations per minute—and riding on cast iron won't do. This explains why the Brunner engineering specifies a hard bronze alloy at this vital point, and extreme accuracy of boring and alignment. • • • • Just listen to a Brunner snap "on" and quietly purr—whether it's new or many thousand tons of refrigeration old. Extremely quiet! Naturally this means less wear and tear, greater serviceability. • • • • You'll be interested in a detailed study of the Brunner construction and range of models, comprising 47 Condensing Units, air and water cooled for practically all refrigerating and air conditioning applications. Full information for quick reference in the Brunner Refrigeration Catalog. . . . Your copy will be mailed promptly on request. Brunner Manufacturing Co., Utica, N.Y., U. S. A.

BRUNNER
BUILDS FOR *Greater* DEPENDABILITY

Data for 22 More Cities in News Air-Conditioning Survey

PUBLISHED on this page, and on pages 15, 16, and 18 of this issue, is Part II of the AIR CONDITIONING AND REFRIGERATION NEWS survey covering installations of air-conditioning systems, by size and market classification, for major population centers in this country. Part I of the survey, covering most of the cities in the "first 30" of population rank, was published in the Jan. 6 issue.

Response to the survey from power companies was so great that not enough space can be spared to allow publication of all the remaining data in this issue, so more of the surveys will be published next week.

In later issues will be published even more complete market data information on air-conditioning installations in the form of those complete reports issued by some utilities which give the name and address of the establishments, make of equipment installed or the installing firm, and the size.

— AIR CONDITIONING SURVEYS —

Tennessee Elec. Power Co. (Chattanooga-Nashville Area)

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Beauty Parlors	0	0	2	9	1	3.25	3	12.25
Department Stores	0	0	1	26.5	7	528.75	8	555.25
Retail Stores	2	118.5	14	178.35	9	105.1	25	401.95
Hotels	0	0	0	0	3	32.5	3	32.5
Offices	11	32.5	12	56.05	10	62.9	33	151.45
Residences	17	28.1	1	.5	13	16.08	31	44.68
Restaurants	6	105.25	5	83.5	6	64.7	17	253.45
Theaters	3	745	2	108	2	77.5	7	930.5
Banks	0	0	0	0	1	40	1	40
Hospitals	0	0	1	1.05	1	2.5	2	3.55
Clubs	0	0	1	28	1	12.5	2	40.5
Laundry	0	0	0	0	1	1	1	1
Broadcasting Studios	0	0	0	0	2	18.5	2	18.5
Record Vaults	0	0	1	1.5	0	0	1	1.5
Apartments	0	0	1	27	0	0	1	27
Orphanages	0	0	1	5.5	0	0	1	5.5
Industrial	1	1.5	0	0	0	0	1	1.5
Candy Mfg.	4	58.25	0	0	0	0	4	58.25
Laundries	2	2	0	0	0	0	2	2
Exhibits and Displays	1	30	0	0	0	0	1	30
Total	47	1,121.1	42	524.95	57	965.28	146	2,611.33

Vining Suggests Quality Selling

BUFFALO—Building business on the basis of selling quality rather than low selling price was the objective for 1937 which Vernon E. "Sam" Vining, director of department store sales for Westinghouse Electric & Mfg. Co., suggested to the 400 retailers who attended the annual dinner of the Electrical League of the Niagara Frontier held recently at the Statler hotel.

The group attending the dinner was composed of electric appliance distributors, dealers, salesmen, buyers from furniture stores, department stores, and manufacturers' representatives.

Using as his keynote "sell quality, not price," Mr. Vining told league members that electric appliance retailers in this area are losing approximately five million dollars each year by promoting merchandise of an inferior quality and by quoting other merchandise at less than a normal profit.

"We are too apt to sell people merchandise on the basis of price alone; to sell them something at a price they will readily pay rather than sell them what they really need," Mr. Vining said.

"If we are going to stay in business," he continued, "we must educate ourselves and the people who sell electrical appliances in terms of the housewife who is going to use them and see that she gets that extra dollar's worth."

Presentation of a silver trophy to the General Electric Supply Co. for having turned in the largest total of retail contestants in the fall lighting sales contest, was made at the dinner. Joseph K. B. Hare, chairman of the contest, awarded the trophy.

Atlanta Ga. and Vicinity

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Barber Shops	1	5	1	4	0	0	2	9
Banks	0	0	2	7.33	3	33.16	5	40.49
Beauty Parlors	1	18	0	0	2	8.1	3	26.1
Candy Mfg.	0	0	0	0	1	3.05	1	3.05
Department Stores	4	719	4	691	4	1,707.66	12	2,117.66
Dress Shops	0	0	5	68.5	3	19.88	8	88.38
Drug Stores	1	5	2	54	3	56	6	115
Exhibits & Displays	0	0	6	76.5	1	25	7	101.5
Five and Ten Cent Stores	0	0	0	0	3	445.83	3	445.83
Funeral Homes	1	3.5	0	0	1	10	2	13.5
Fur Storage	0	0	0	0	1	21.5	1	21.5
Grocery Stores	0	0	1	4	0	0	1	4
Haberdasheries	1	15	0	0	3	25.5	4	40.5
Hospitals	2	6	1	2	0	0	3	8
Hotel Dining and Cocktail Rooms	0	0	2	218	4	54.37	6	272.37
Hotel Bed Rooms	2	3	0	0	1	22	3	25
Jewelry Stores	0	0	0	0	2	10.25	2	10.25
Industrial	4	45	8	224.5	2	20	14	289.5
Market Spaces	0	0	0	0	1	8	1	8
Opticians	0	0	0	0	3	9.75	3	9.75
Printing Establishments	0	0	0	0	1	.55	1	.55
Private Offices	24	80.5	25	290	38	166.6	87	537.1
Radio Studios	0	0	0	0	1	2.5	1	2.5
Residences	12	33.75	15	59	14	28.4	41	121.15
Restaurants	11	248	12	201	5	69	28	518
Shoe Stores	0	0	2	20	3	27.25	5	47.25
Theaters	4	1,667	5	248	4	152.75	13	2,067.75
Wine & Liquor Stores	0	0	1	15	0	0	1	15
Total	68	2,848.75	92	2,182.83	104	2,927.1	264	7,958.68

Dallas, Texas

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Residences	26	50.05	19	67.62	46	61.49	91	179.16
Offices	19	161.78	21	115.25	24	219.50	64	496.53
Office Buildings (complete)	1	33	2	551.35	0	15	3	599.35
Banks	2	482.5	0	0	1	354.41	3	836.91
Beauty Parlors	0	0	0	0	2	25.12	2	25.12
Broker Board Rooms	1	33.83	0	0	0	0	1	33.83
Drug Stores	0	0	0	0	5	100.07	5	100.07
Hospitals	0	0	1	.07	2	4.13	3	4.20
Hotels (including dining rooms, etc.)	1	496	2	149.50	3	289.73	6	935.23
Miscellaneous	3	4.79	1	32.26	4	48.69	8	85.74
Restaurants	4	90	3	32.75	6	82.15	13	204.90
Retail and Dept. Stores	10	1,205.13	6	110.98	6	376.30	22	1,692.41
Theaters	3	760.25	1	107.50	0	0	4	867.75
Undertakers	1	10	1	18	1	24	3	52
Texas Centennial	..	...	..	...	36	2,148	36	2,148
Total	71	3,327.33	57	1,185.28	136	3,748.59	264	8,261.20

Potomac Edison Co., Hagerstown, Md.

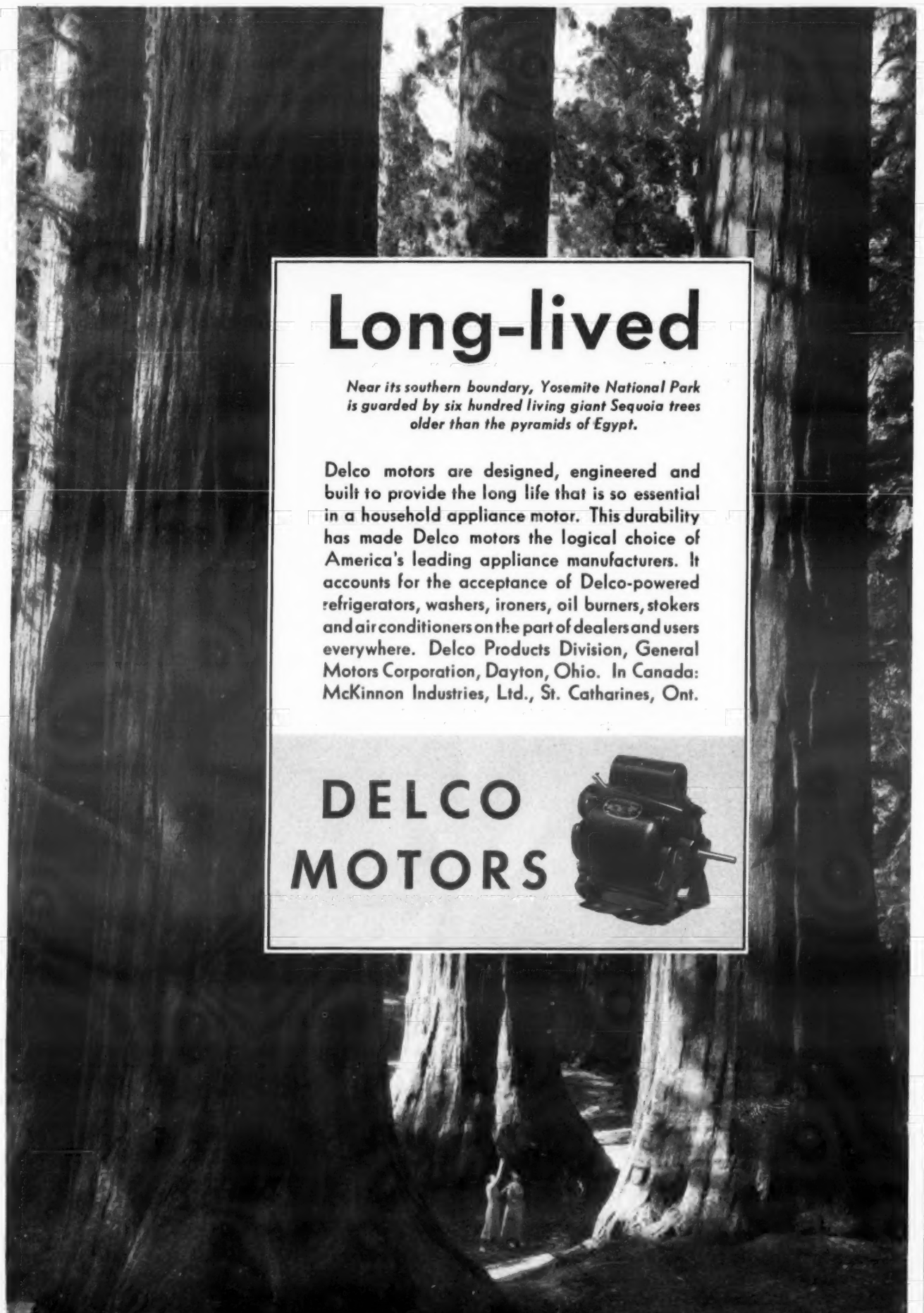
Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	11 Mos., 1936 No.	11 Mos., 1936 Hp.	Total No.	Total Hp.
Apartments	2	2	0	0	1	.5	3	2.5
Banks	1	.5	1	.5	0	0	2	1
Candy and Confectionery	2	4.5	0	0	1	3.75	3	8.25
Clubs	0	0	2	6.5	0	0	2	6.5
Dentists' Offices	1	.5	4	3.25	0	0	5	3.75
Doctors' Offices	1	.5	0	0	2	1.5	3	2
Fur Storage	0	0	1	1.5	0	0	1	1.5
Jewelry Stores	0	0	0	0	1	3.5	1	3.5
Laboratories	0	0	1	.75	0	0	1	.75
Miscellaneous	0	0	0	0	1	5	1	5
Offices	5	15	2	11	11	24.5	18	50.5
Radio Stations	1	1	1	.5	0	0	2	1.5
Residences	1	1.5	0	0	3	2.5	4	4
Restaurants	1	6	1	6	2	27.5	4	39.5
Department Stores	0	0	2	9	1	3.5	3	12.5
Tap Rooms and Grills	1	6	1	3	0	0	2	9
Theaters	1	20	1	10	1	10	3	40
Funeral Homes	0	0	0	0	1	6	1	6
Total	17	57.5	17	51	25	88.25	59	196.75

Ohio Edison Co. (Akron Division)

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Candy Company	1	5	0	0	0	0	1	5
Department Stores								
Candy Kitchen	1	.5	0	0	0	0	1	.5
Executive Offices	2	.5	0	0	0	0	2	.5
Funeral Parlors	0	0	0	0	1	7	1	7
Hotels								
Coffee Shop, Dining Room Barber Shop	1	75	0	0	0	0	1	75
Guest Room	0	0	0	0	1	1	1	1
Residences	0	0	3	3.5	3	1.75	6	5.25
Restaurants	2	28	1	10	3	32.4	6	70.4
Stores								
Shoe	1	7.5	1	16	0	0	2	23.5
Clothing	2	18.25	1	8	3	46	6	74.25
Fur	0	0	1	.5	0	0	1	.5
Music Store	1	6	0	0	0	0	1	6
Dairy Store	0	0	0	0	1	5.5	1	5.5
Offices	0	0	3	11	6	20.5	9	31.5
Theaters	2	500	0	0	1	30	3	530
Miscellaneous	0	0	1	25	2	20	3	45
Total	13	640.75	11	74	21	164.15	45	878.9

St. Joseph, Mo.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Hotels	1	10	1	25	1	28	3	63
Industrial	1	40	0	0	1	15	2	55
Theaters	2	140	0	0	0	0	2	140
Stores	0	0	4	17.5	7	96	11	113.5
Funeral Homes	0	0	2	20	0	0	2	20
Beauty Parlors	0	0	1	3	2	8.33	3	11.33
Residences	0	0	5	4.75	6	9.37	11	14.12
Banks	0	0	1	1	0	0	1	1
Department Stores	0	0	0	0	1	65.5	1	65.5
Furriers	0	0	0	0	1	5.5	1	5.5
Offices	0	0	0	0	2	2.25	2	2.25
Restaurants	0	0	0	0	3	27.58	3	27.58
Drug Stores	0	0	0	0	1	13.5	1	13.5
Total	4	190	14	71.25	25	271.03	43	532.25


Long-lived
Near its southern boundary, Yosemite National Park is guarded by six hundred living giant Sequoia trees older than the pyramids of Egypt.
Delco motors are designed, engineered and built to provide the long life that is so essential in a household appliance motor. This durability has made Delco motors the logical choice of America's leading appliance manufacturers. It accounts for the acceptance of Delco-powered refrigerators, washers, ironers, oil burners, stokers and air conditioners on the part of dealers and users everywhere. Delco Products Division, General Motors Corporation, Dayton, Ohio. In Canada: McKinnon Industries, Ltd., St. Catharines, Ont.
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PERFECTION REFRIGERATION PARTS CO.
HARVEY, ILLINOIS

Oklahoma Gas & Electric Co. Territory

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Apartments	2	3.1	0	0	3	6.75	5	9.85
Private Homes	38	80.48	21	42.14	66	107.50	125	230.12
Apartment Houses	0	0	0	0	1	5.75	1	5.75
Banks	1	56.5	1	25	2	38.75	4	120.25
Doctors' & Dentists' Offices	1	2.1	0	0	10	16.75	11	18.85
Funeral Parlors	1	3.2	1	22	1	8.5	3	33.7
Hospital Operating Rooms	2	4.2	0	0	0	0	2	4.2
Hospital Bed Rooms	1	5.75	0	0	3	20.50	4	26.25
Offices	5	22.9	14	37.34	37	260	56	320.24
Studios, Broadcasting	1	3.05	1	36.66	2	1.25	4	40.96
Utility Company Offices	8	87.55	0	0	2	16.25	4	103.80
Barber Shops	0	0	1	3.1	1	6	2	9.1
Hotel Coffee Shops, and Dining Rooms	1	187.5	0	0	1	7	2	194.5
Office Buildings	1	54.5	1	400	*	121	2	575.5
Restaurants	2	68.2	4	68	7	92.25	13	228.45
Stores, Department	1	7.5	1	105	1	36	3	148.50
Stores, Retail	10	50.08	8	98.30	18	373	36	521.38
Theaters	3	916.50	0	0	0	0	3	916.50
Auditoriums	1	13.50	0	0	1	50	2	63.50
City Hall	0	0	0	0	1	350	1	350
Schools	0	0	0	0	1	7.5	1	7.50
Miscellaneous Commercial	0	0	1	3.53	1	1.75	2	5.28
Bakeries	1	11.5	0	0	0	0	1	11.5
Fur Storage	1	5.2	0	0	0	0	1	5.2
Miscellaneous Industrial	1	9.25	1	3.3	1	3.5	3	16.05
Total	76	1,592.56	55	844.37	160	1,530	291	3,966.93

*Addition.

Syracuse, N. Y.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Bakeries	0	0	0	0	1	12	1	12
Candy Mfg.	1	19	0	0	0	0	1	19
Department Stores	0	0	1	24	0	0	1	24
Dress Shops & Ladies' Apparel	2	23	2	109.25	2	31	4	163.25
Funeral Parlors	0	0	0	0	1	18	1	18
Haberdasheries	0	0	0	0	1	24	1	24
Hotel Dining Rooms and Cocktail Rooms	0	0	0	0	2	110.50	2	110.50
Jewelry Stores	0	0	1	3.25	2	10.25	3	13.50
Office Buildings	1	31.75	0	0	0	0	1	31.75
Printing Establishments	1	152.5	0	0	0	0	1	152.5
Private Offices	0	0	4	4	2	3.33	6	7.33
Radio Studios	1	3.25	0	0	0	0	1	3.25
Residences	0	0	0	0	1	1.75	1	1.75
Restaurants	0	0	1	60	3	36	4	96
Shoe Stores	0	0	0	0	1	13	1	13
Theaters	3	815	1	10	0	0	4	825
Fruit Ripening	2	51	0	0	0	0	2	51
Hosiery	0	0	0	0	1	3.75	1	3.75
Total	11	1,095.5	10	210.5	17	263.58	36	1,569.58

Mississippi Power (Jackson, Greenville, Vicksburg Area)

Classification	Prior to 1935 No.	Prior to 1935 Tons	During 1935 No.	During 1935 Tons	During 1936 No.	During 1936 Tons	Total No.	Total Tons
Hospitals	0	0	0	0	3	6.37	3	6.37
Physicians' Offices	0	0	0	0	6	3.62	6	3.62
Dairies	0	0	0	0	1	2	1	2
Restaurants	0	0	2	18	4	74	6	92
Residences	6	6.25	5	4.25	11	10.5	22	21
Dressing Shops	0	0	0	0	1	3	1	3
Hotels	0	0	0	0	4	5	4	5
Laboratories	0	0	0	0	1	.62	1	.62
Funeral Homes	0	0	0	0	1	3	1	3
Banks	0	0	1	36	1	1	2	37
Miscellaneous Commercial	2	4	5	6.25	7	14	14	24.25
Millinery Shops	0	0	0	0	1	.5	1	.5
Night Clubs	0	0	0	0	1	3	1	3
Ice Cream Mfg.	0	0	0	0	1	1	1	1
Drug Stores	0	0	0	0	1	13	1	13
Tourist Camps	1	10	0	0	1	16	2	26
Department Stores	1	1	0	0	0	0	1	1
Beauty Parlors	1	6	1	3	0	0	2	9
Offices	1	3	0	0	0	0	1	3
Cleaning Establishments	1	1	0	0	0	0	1	1
Garages	2	2.5	1	.75	0	0	3	3.25
Utilities' Offices	1	.5	1	.5	0	0	2	1
U. S. Government Fleet	1	2	0	0	0	0	1	2
Bakeries	0	0	1	3	0	0	1	3
Laundries	0	0	1	5	0	0	1	5
Total	17	36.25	18	72.75	45	156.61	80	253.61

Jacksonville, Fla.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Beauty Parlors	0	0	0	0	1	3	1	3
Barber Shops	0	0	0	0	1	3	1	3
Drug Stores	0	0	1	24	1	10	2	34
Funeral Homes	0	0	0	0	1	5	1	5
Hotels	0	0	2	21	2	21	4	42
Industrial	0	0	0	0	2	55	2	55
Libraries	1	5	0	0	0	0	1	5
Offices	1	10	1	3	14	25	16	38
Residences	0	0	1	3	8	26	9	29
Restaurants	1	25	3	20	5	62	9	107
Retail Stores	0	0	5	168	4	91	9	259
Telephone Company	0	0	2	18	0	0	2	18
Theaters	1	200	0	0	1	100	2	300
Court House	0	0	1	103	0	0	1	103
Markets	0	0	1	10	0	0	1	10
Total	4	240	17	370	40	401	61	1,011

Springfield, Mass. Territory

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Cocktail Rooms	2	17	0	0	2	17.5	4	34.5
Shoe Stores	1	5	0	0	0	0	1	5
Theaters	1	235	0	0	0	0	1	235
Candy Stores	1	20	1	9.5	0	0	2	29.5
Funeral Homes	1	5	1	9	0	0	2	14
Residences	1	5	1	1.5	3	4.5	5	11
Hotels	1	7.5	1	20	0	0	2	27.5
Restaurants	0	0	3	32	3	32	6	64
Offices	0	0	6	191	5	17.5	11	208.5
Printing Shops	0	0	1	9	0	0	1	9
Millinery Shops	0	0	1	2	1	4.5	2	6.5
Industrial	0	0	0	0	2	63	2	63
Carriers	0	0	0	0	1	2	1	2
Haberdasheries	0	0	0	0	1	1	1	1
Banks	0	0	0	0	1	17	1	17
Drug Stores	0	0	0	0	1	17	1	17
Total	8	294.5	15	274	20	176	43	744.5

Manchester, N. H.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Theaters	1	14.75	1	21.75	1	23	3	59.5
Restaurants	1	9	2	23.5	1	9	4	41.5
Stores	1	1.25	2	10	0	0	3	11.25
Physicians' Offices	0	0	0	0	1	.75	1	.75
Residences	3	.75	4	1	18	7.33	25	9
Office Buildings	0	0	0	0	2	8.50	2	8.50
Industrial	0	0	0	0	1	22	1	22
Miscellaneous	1	4	2	.75	3	7	6	11.75
Total	7	29.75	11	57	27	77.58	45	164.25

Columbia U. Will Sponsor Air Conditioning Course

NEW YORK CITY—Air conditioning will be the subject of a general course in the extension division of the Columbia University School of Architecture during the 1937 spring session.

R. W. Waterfill of Buensod-Stacey Air Conditioning, Inc., Westinghouse distributor, will direct the work, which is designed to present fundamental principles of air conditioning and air-conditioning systems, as well as the relation and functioning of the various units of a system.

Effort will be made to present the material to both the technically and non-technically trained student. The class will meet twice a week, on Monday and Thursday evenings at 8:25 o'clock.

U. S. Shanghai Consul Outlines Conditioning Market

SHANGHAI, China — Considerable demand exists here for air-conditioning equipment, according to U.S. Consul General C. E. Gauss, in spite of the present economic depression here.

Ventilation of buildings and schools is less thorough here than in the United States, Mr. Gauss reports, but many theaters, dance halls, and restaurants have been air conditioned.

Little demand exists for acid-proof equipment, he states, but moisture-proof blowers are used to some extent.

There are no local manufacturers of any large ventilating equipment, says Mr. Gauss, and while European firms have entered the field, anticipating an upswing, present figures indicate that they offer little competition to agents for American concerns.

Trane Lets Contract for Addition to Plant

LA CROSSE, Wis.—Contracts have already been let by The Trane Co. for that firm's latest addition to Plant 2.

The structure will be on a single level, thus eliminating any need for elevators or stairways. Total floor space will be approximately 34,000 sq. ft.

This expansion is being financed by a recently floated issue of $300,000 worth of 6% cumulative first preferred stock at a par value of $100 per share.

Discussing the expansion, President R. N. Trane declared that: "Manufacture of air-conditioning equipment this year exceeded that of last year by 65%. With the growing market in standard heating lines, this increase promises to be even greater in 1937."

Makes FLOATING ICE

PELCO Electric Beverage-Food COOLER

...AND

THAT ONE FEATURE *Alone* OPENS A BIG NEW MARKET FOR REFRIGERATION SALES

PELCO gives you *two outstanding features* that are sales dynamite - - - 1. It makes its own floating ice - - - automatically - - - as needed. 2. It's a *combination* cooler - - - has a wet and dry compartment.

Every place selling bottled beverages and food is a prospect. Just count the taverns, restaurants, hotels, lunch rooms, and other prospects near you!

PROFITABLE VOLUME *in 30 Days Time!*

You don't have to put months of effort behind Pelco to build profitable volume. Here's why—

1. Besides making its own ice and being a combination job—package-type—PELCO plugs into any light socket.
2. Chills bottled goods from room temperature to desired degree in approximately 30 minutes. Nine stages of cold control.
3. High efficiency unit—low current consumption.
4. Heavily insulated—rust-resisting galvannealed steel.
5. A complete line of various sizes employing the PELCO floating ice principle.
6. Attractive red finish, black trim, with Stainless Steel top molding. Chrome plated hardware.

Distributors—a few choice territories are still available. Dealers—write immediately for name of nearest distributor. Address Desk A-17.

The COMBINATION idea finds great favor wherever it is shown. Doubles the utility. Lower compartment can be used as a pre-cooler for beverages, or as an efficient refrigerator for foods.

Refrigerator Division
PORTABLE ELEVATOR MFG. CO.
BLOOMINGTON, ILLINOIS

— AIR CONDITIONING MADE EASY —

Gravity and Forced Hot Air Heating Systems

SECTION NO. 7
Heating (Continued)

BY F. O. JORDAN

Gravity Hot Air Heating

This type of system, as shown by Fig. 50, enjoys a very wide-spread use, especially in cases where first cost is paramount.

Air circulation is set up because the air, upon being heated within the casing, rises and passes out through the leaders and stacks into the spaces to be heated. This air is replaced by the relatively cooler air which flows down through the cold air ducts (or through the outside air duct where an outside air connection is provided) into the casing.

The chief weakness of the gravity system is its susceptibility to outside wind direction and velocity, due to the fact that the slight pressure resulting from infiltration in rooms upon the windward side of the building very seriously diminishes air-flow to such rooms.

This weakness may be largely remedied, and the general effectivness of the entire system may be considerably improved, by placing a booster fan in the system for imparting a more positive air movement. This may be of the multi-blade blower type, although the propeller type of fan is generally used for this type of service with satisfactory results, because of the very low net resistance to air-flow in this type of system.

The preferred location for the booster fan is in the cold air box, as this location insures a slight pressure within the casing which prevents the leakage of smoke and carbon monoxide into the air stream through possible leaks in the furnace.

The controls for this system may be manual or automatic, as described below under "Automatic Controls and Zoning."

Domestic Forced Hot Air Heating

Fig. 51 shows a typical furnace and fan installation for the forced hot air system in which the fan draws through removable filters and discharges through a hot air furnace.

Generally, humidifying sprays are installed, either within the air supply unit or within a special humidifier or "washer" chamber, located between the air supply unit and the furnace, or a humidifying pan is installed in the bonnet.

In some makes of units, an automatic by-pass damper is arranged to open when the fan is stopped, so that the fan will be by-passed and a certain amount of gravity circulation obtained.

With many units, a housing is provided which encloses both the furnace and the air supply unit. If desired, a cooling coil may be provided (usually at the intake to the air supply unit) for summer conditioning.

The advantages of this system are as follows:

1. Good air circulation and distribution may be obtained.
2. Operation not greatly affected by wind.
3. Air heating unit need not be located near center of building.
4. Run-outs need not be sloped and may be made small so that they may be concealed between joints.
5. System may be used for summer cooling by addition of cooling coil.

Controls may be provided, as described below, under "Automatic Cintrols and Zoning."

Fig. 52 shows a typical floor-type supply unit which heats the air by means of a heating coil using steam or hot water. A cooling coil also may be provided, as shown, if desired.

Gravity Hot Air System

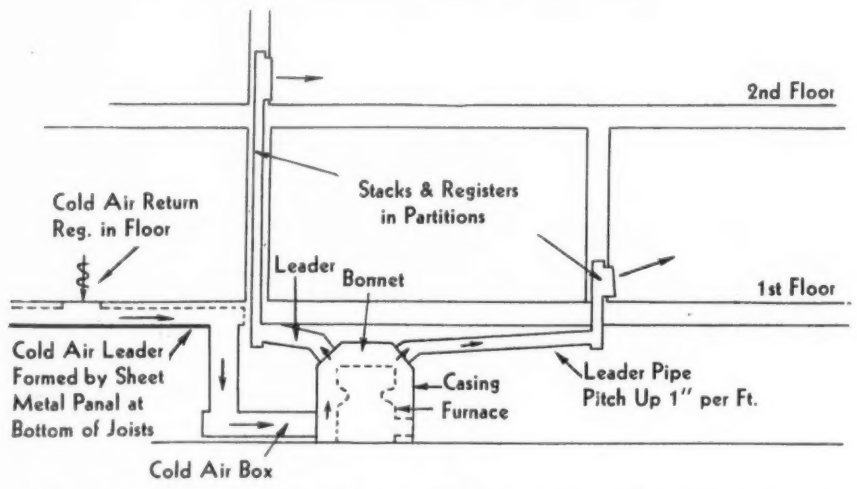


Fig. 50—Typical gravity hot air heating system, frequently used in domestic service.

Furnace & Fan Installation

Fig. 51—Typical furnace and fan installation for forced hot air system.

Floor-Type Supply Unit

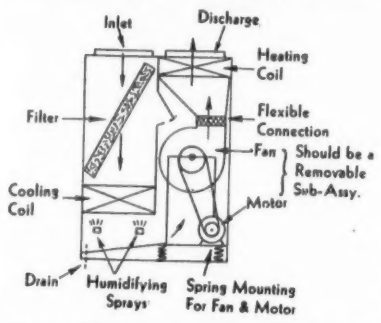


Fig. 52—A typical floor-type supply unit.

This unit is arranged to draw air from the cold air or recirculating duct and discharge to the warm air supply duct system.

Fig. 53 shows an air supply unit which serves the same purpose as unit shown by Fig. 52, except that it is designed to be mounted overhead.

Overhead Unit

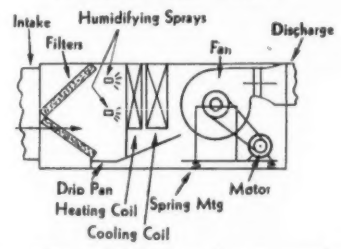


Fig. 53—Typical overhead supply unit.

Figs. 51, 52, and 53 indicate general types of equipment only. The details and arrangements of the various available units differ greatly. The types of duct systems used and the methods of introducing the air into the rooms also varies considerably.

In some cases, individual supply ducts may be run from the furnace or air heating unit to each room, although a more common arrangement is the "trunk" system in which air is passed through a main duct, at about 800 f.p.m. velocity, branches for the various rooms being taken from the main in the basement.

With the latter system, the main duct is diminshed in size at each branch, and adjustable deflectors are provided at all branches for scooping out the proper air quantity of air.

The "trunk" system is the most economical system in the quantity of sheet metal used. However, for small installations of the size required for the usual residence, the labor cost involved in laying out and farbricating a special "tailor-made" duct frequently offsets the saving in material, and results in a higher installation cost for the "trunk" system than for the system which does not require special work.

Another disadvantage of the "trunk" system for domestic use is that the comparatively low air velocities required for this type of system interfere with the effectivness of the deflectors, so that good air distribution is somewhat difficult to obtain.

Consumers Power Co. (Outstate Michigan)

Classification	Prior to 1935 No.	Prior to 1935 Tons	During 1935 No.	During 1935 Tons	During 1936 No.	During 1936 Tons	Total No.	Total Tons
Industrial	2	3	5	120	2	63	9	186
Theaters	2	330	5	135	8	415	15	880
Hotels	2	26	3	13.5	2	25	7	64.5
Restaurants	6	80	2	23	9	75.5	17	178.5
Drug Stores	0	0	2	40	1	15	3	55
Test Booths	0	0	0	0	1	1.5	1	1.5
Funeral Homes	0	0	2	15	3	17.75	5	32.75
Offices	18	254	13	230.7	13	142.65	44	627.35
Jewelry Stores	0	0	0	0	2	9	2	9
Stores	3	56	4	75	5	180	12	311
Department Stores	0	0	0	0	1	140	1	140
Banks	1	3	0	0	1	1.25	2	4.25
Tap Rooms	0	0	0	0	1	30	1	30
Beauty Parlors	0	0	0	0	1	3	1	3
Dark Rooms	0	0	0	0	1	.75	1	.75
Residences	0	0	11	14	6	4.25	17	18.25
Sanitarium	0	0	1	68	0	0	1	68
Laboratories	0	0	1	7	0	0	1	7
Physicians' Offices	0	0	1	.5	0	0	1	.5
Furriers	0	0	1	.5	0	0	1	.5
Church	1	30	0	0	0	0	1	30
Total	**35**	**782**	**51**	**742.2**	**57**	**1,123.65**	**143**	**2,647.85**

Richmond, Va.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	11 Mos., 1936 No.	11 Mos., 1936 Hp.	Total No.	Total Hp.
Beauty Parlors	0	0	2	16	1	6	3	22
Drug Stores	1	15	0	0	0	0	1	15
Theaters	7	1,349	9	478	8	291	24	2,118
Department Stores	3	1,055	4	831	1	250	8	2,136
Specialty Stores	4	30	14	164	20	493	38	687
Residences	15	33	11	25	9	19	35	77
Restaurants	2	60	8	87	5	77	15	224
Hospitals	2	10	3	21	1	18	6	49
Funeral Homes	1	25	2	31	2	12	5	68
Offices	7	18	16	83	10	58	33	159
Banks	1	60	0	0	0	0	1	60
Industrial	3	585	2	53	3	50	8	688
Telephone Exchange	1	116	0	0	0	0	1	116
Billiard Parlor	0	0	1	17	0	0	1	17
Optical Manufacturer	0	0	1	12	0	0	1	12
Radio Station	0	0	0	0	1	5	1	5
Total	**47**	**3,356**	**73**	**1,818**	**61**	**1,279**	**181**	**6,453**

Spokane, Wash.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Banks	0	0	1	22*	2	27*	3	49*
Doctors' Offices	0	0	2	3	0	0	2	3
Offices	2	6	4	2	1	5.5	7	13.5
Utility Company Offices	1	11	2	14	0	0	3	25
Hotel Coffee Shops	0	0	1	3	1	5.5	2	8.5
Restaurants	2	23	0	0	2	12	4	35
Retail Stores	1	133	0	0	1	13	2	146
Theaters	1	141	0	0	0	0	1	141
Fruit Packing	87	1,400	9	550	0	0	96	1,950
Residential	2	5	0	0	1	1	3	6
Total	**96**	**1,719**	**19**	**594**	**8**	**64**	**123**	**2,377**

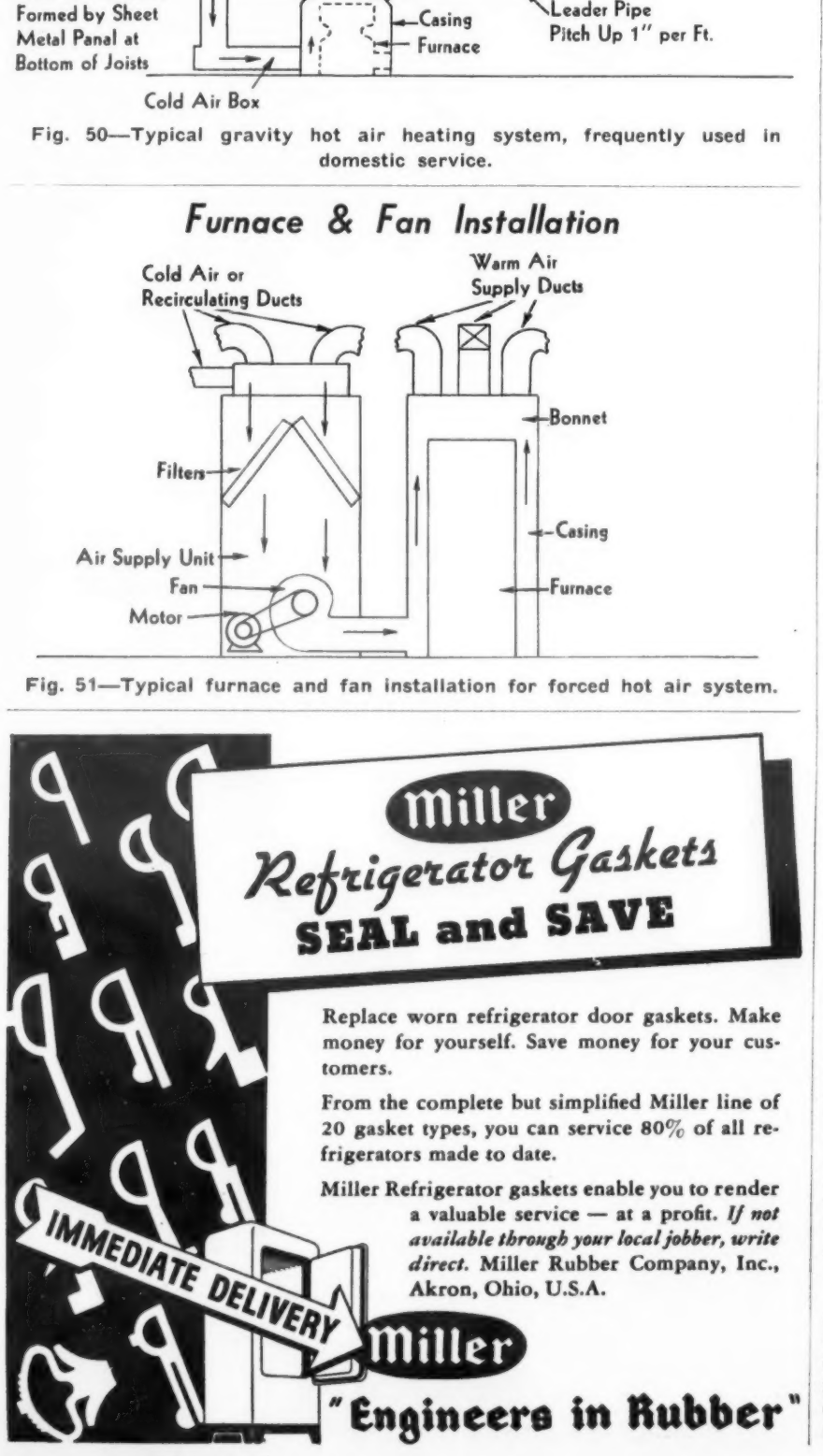
*Same bank—3 floors.

Northern Indiana Public Service Co. Territory

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Offices	1	8	1	20	2	25.5	4	53.5
Residences	0	0	0	0	1	3.33	1	3.33
Restaurants	0	0	1	42.5	0	0	1	42.5
Theaters	2	270	0	0	0	0	2	270
Total	**3**	**278**	**2**	**62.5**	**3**	**28.83**	**8**	**369.33**

Sioux City, Iowa

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Offices	4	29	8	53.25	6	12.25	18	94.5
Restaurants	5	48	0	0	1	19	6	67
Theaters	2	425	0	0	0	0	2	425
Stores	3	29	2	17.5	13	161.5	18	208
Residences	1	2.5	3	6	7	8.25	11	16.75
Barber Shops	0	0	0	0	3	7.5	3	7.5
Miscellaneous	0	0	0	0	3	24.5	3	24.5
Total	**15**	**533.5**	**13**	**76.75**	**33**	**233**	**61**	**843.25**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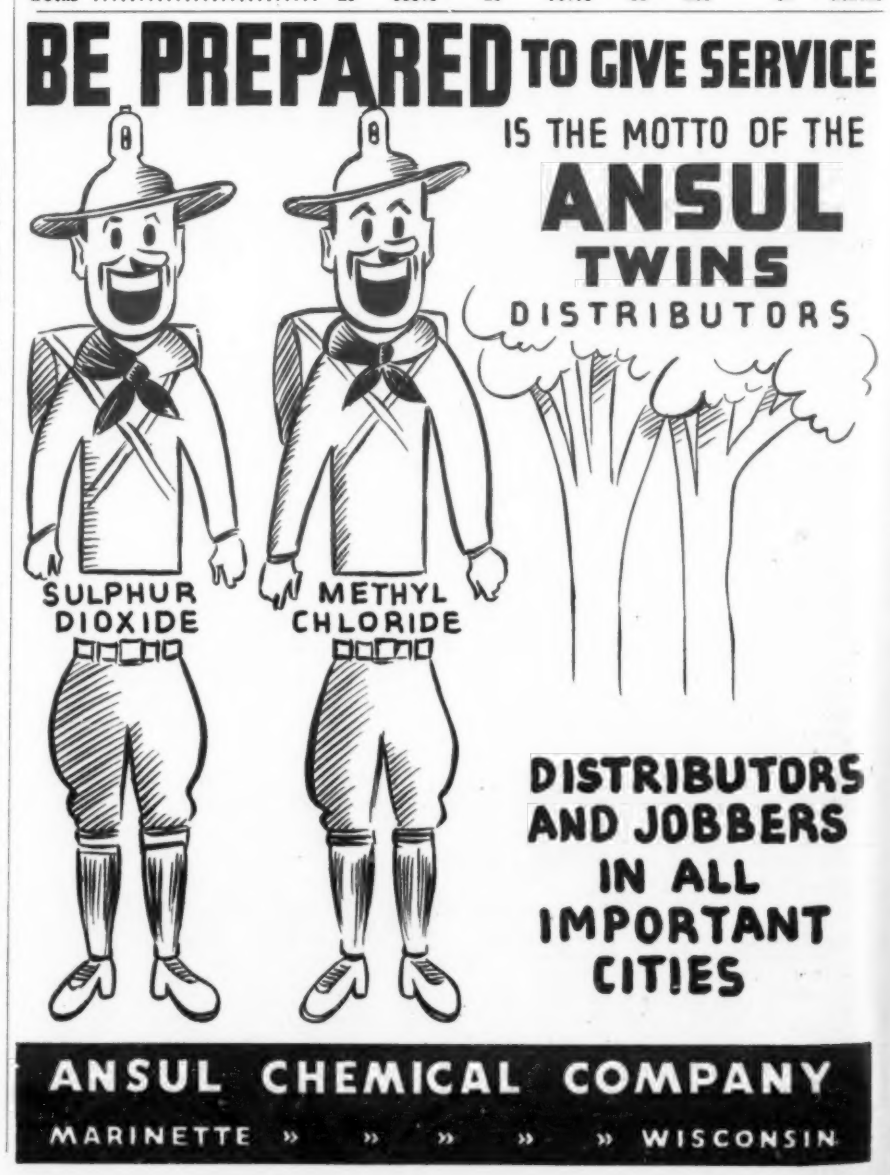

History of Air Conditioning

In the Jan. 6 "Air Conditioning Progress Number" of AIR CONDITIONING AND REFRIGERATION NEWS was published the first part of a history of the air-conditioning industry as revealed by the files of the NEWS.

Last week's presentation covered the first or "infant" period of the industry, from 1911 to 1933. The period of intensive development, 1934-36, is described below, as the NEWS files recorded it in terms of development of the product, formation of new companies and entrance of older companies into the new field, introduction of new models, and adaptations of air-conditioning equipment to new and varied uses.

— AIR CONDITIONING NEWS —

1934 Marked Air-Conditioning Industry's First 'Big' Year

Air conditioning came into its own for the first time in 1934. Developments in the field were of wide scope and variety, and more and more electric refrigeration dealers turned to the sale of air-conditioning equipment and an added source of income.

Manufacturers brought out equipment designed for summer, winter, and all-year use; several large department stores and theaters contracted for installation jobs; the new streamlined trains were air-conditioned throughout; the use of air-conditioned exhibits at A Century of Progress was vastly increased; hotels, restaurants, hospitals, office buildings and private homes installed the systems; and "model homes," displayed in various cities, stressed the value of air conditioning as an aid to comfort and health.

HEALTH ASPECTS

Air conditioning was credited with possibilities of far-reaching importance for improving the health of persons living in American climate by several members of the medical profession who addressed the 40th annual convention of the American Society of Heating and Ventilating Engineers in New York early in February.

Their contentions were borne out, at least in part, by results of a survey announced by the Philadelphia Electric Co. about the same time.

A reduction of 33% in lost time due to respiratory ailments was noted during the first year of the study, made among its own employes, and a further decline in lost time of 43% was recorded in the second year.

Further investigation showed that efficiency, especially during the hot summer months, was increased to a large extent in air-conditioned offices as compared with those not so equipped. Labor turnover, caused by workers leaving for more comfortable jobs during the hot months, also was reduced.

Auditorium Conditioning Corp., holder of basic patents in the air-conditioning field, began licensing manufacturers to incorporate in their units some of the features which it controlled.

York Ice Machinery Corp. brought out six new conditioning units for various types of applications.

In May, Carrier Engineering Corp. added two store coolers and three Freon units to its line, and announced that more than 1,000 Carrier dealers were equipped to handle the smaller installations.

Westinghouse then brought out a portable, self-contained air conditioner which operated at low cost and was easily installed, and later introduced compressors for air conditioning up to 6-ton capacity.

Fox Co. came out with a year-round conditioner, and Crosley entered the field with an air-cooled bed canopy, of special utility now that warmer weather was approaching.

Early in June, Savage Arms Co. announced its entry into the air-conditioning field, and a short time later developed an all-year system. Lipman conditioning equipment featured a cabinet type cooler. Kauffman designed two new conditioners, and York contributed to the advance of the industry with a table-high cabinet, designed to deaden the noise of the condensing unit.

ENTRY OF CHRYSLER

Mid-year's biggest news in the field was the entry of Chrysler into the industry.

Increased use of air-conditioning facilities on crack trains of various railroad systems early in the year continued to boom as the days advanced. Introduction of streamlined trains was another means by which public notice was focused on developments in the air-conditioning field.

Air-conditioning machinery manufactured by York Ice Machinery Corp. was installed in the high-speed Diesel-electric train of the Chicago, Burlington & Quincy Railroad, with three cars permanently coupled to form a completely articulated train.

Fifty new coaches of the New York, New Haven & Hartford railroad were supplied with General Electric air-conditioning equipment. Each car used a single-unit evaporator consisting of heating and cooling coils, with blower fans and motors which furnished conditioned air through a center duct extending the length of the car.

Pullman Car & Mfg. Co. gave Frigidaire an order for conditioning one six-car and two nine-car streamlined, aluminum high-speed trains. The cars were being built for the Union Pacific railroad.

RAILROAD CONDITIONING

A tabulation compiled in mid-summer listed a total of 2,453 air-conditioned railway cars in service on the various railroads of the country. Largest user was the Pullman Co., with Pennsylvania, New Haven, and Baltimore & Ohio following in the order named.

Romance entered air conditioning on the decision of the owners of the Robinson Deep Mine, a gold mine near Johannesburg, South Africa, and one of the two deepest shafts in the world, to go ahead with the largest air-conditioning installation in the world, involving 2,000 tons of refrigeration capacity. The event attracted world-wide notice.

Contract for the job went to Carrier, following a year's study by one of the company's engineers, D. C. Lindsay, in cooperation with Sydney Thompson & Co., Johannesburg, and the mine engineers.

Twice as many installations were made in 1934 as in 1933, according to a NEWS survey covering one-third of the metropolitan and rural population of the country. Chicago was found to be the biggest user in the major cities division with a connected horsepower load of 42,000 tons. A total of 14,000 tons was installed in government buildings in Washington, D. C., during the year.

The largest single installation contract of the year was landed by Westinghouse in conditioning the Chicago Tribune Tower. Five central duct systems were used in the job with 390 cabinets for individual offices. York's 250-ton system installed in the John Shillito store, Cincinnati, was among the other leaders.

AIRTEMP FOUNDED

Chrysler entered the field intensively the same month when it announced the founding of Airtemp, Inc., for production of units ranging between a ½-ton capacity unit and a 150-ton compressor. Airtemp's small cabinet retailed at $75. In August, the Airtemp division formally was made a subdivision of the Chrysler Corp.

Frigidaire air conditioning was installed during the February throughout the six-story Hotel Maytag in Newton, Iowa. This was believed to be the first completely air-conditioned hotel in the United States.

Several manufacturers announced new models during March. York brought out a portable unit, requiring no water or drain-pipe connections, which could be installed simply by connecting the machine to a window duct. Waukesha Motor Co., Waukesha, Wis., started production of self-contained multiple unit systems for railway passenger cars.

Ilg augmented its 1935 line with a self-contained Spot-Kooler and a ceiling unit cooler in four sizes. Kelvinator introduced six self-contained, seven floor-type, 12 suspended-type air conditioners, and 16 condensing units of from ½ to 20 hp.

Lipman started production of a new self-contained floor cabinet.

In a special air conditioning issue, the NEWS listed 200 specifications on systems and parts.

Calling for comparative cost data to stabilize installation prices from within the industry, the NEWS pointed to ridiculously wide price margins quoted on comparable installations, and warned manufacturers and dealers alike that if the industry were to progress along stable lines, there must be some rational system of measuring installation costs.

The NEWS attributed the discrepancy among dealers' bids to inadequate knowledge of the essentials of a good installation, and to poor guesses, based on inexperience, of what it cost a distributor to do business in the field.

COMPANY ACCOUNTING

Frigidaire soon introduced a system of checks and balances whereby company accountants were sent out into the field to see that Frigidaire distributors were keeping overhead, promotion costs, and salesmen's commissions within proper bounds.

G-E also closely scrutinized its distributor and dealer outlets to ascertain to what extent installation costs and profit margins were being kept in balance.

In April, Frigidaire announced that after a year of intensive training given dealers, salesmen, and engineers, the company was launching a national advertising and publicity campaign to educate the public on air conditioning.

Unit Air Conditioner Manufacturers Association changed its name during April to the Air Conditioning Manufacturers Association, and established offices in Washington, D. C., to work on standardization of equipment ratings, installation and performance data, and new applications of air conditioning.

F-M ENTERS FIELD

Fairbanks, Morse & Co., Chicago, entered the field in May with its complete "Ortho-Clime" line of floor, wall, and ceiling types. York added to its series with 10, 20, and 30-ton horizontal type conditioners, and four self-contained condensing units.

A thorough municipal investigation into the causes of a blast in the Mayfair Grill, Chicago, completely exonerated both the equipment and Freon refrigerant used in the installation.

Two workmen were killed and six seriously injured when a compressor exploded while being installed. Strict licensing for all persons making air-conditioning installations in Chicago area was proposed by city authorities shortly after the Mayfair blast.

The Youngstown, Ohio, office of the Ohio Edison Co. instituted a cooperative display by seven dealers during July, at which systems built by American Blower, Carrier, Frigidaire, G-E, Kelvinator, Westinghouse, and York were exhibited.

August found G-E introducing a plug-in portable office or home cabinet with neither water or drain connections. The Bendix division of the Automatic Products Corp., Chicago, entered the field after purchasing the Airiet Air Conditioning Co.

(*Concluded on Page 18, Column 3*)

FREE AN EXTRA SALESMAN WITH EVERY MOTOR

WOULD you like to add to your sales force—*right now*, when refrigerator sales are going up fast—without adding one cent to your payroll?

When the refrigerators you sell are equipped with G-E motors, you get these extra salesmen, and they *help you sell.*

How? Like this: Today, Mr. and Mrs. America are purchasing high-quality merchandise. They judge the quality of a refrigerator not only by its reputation as a unit, but also by the reputation of its various parts. Thus, a well-known name on the motor gives the refrigerators you sell additional acceptance. It is the extra salesman who helps you sell.

Impartial surveys, like that below, show that buyers associate the name General Electric with high-quality electric equipment. Hence, when equipped with G-E motors, the refrigerators you sell have a reputation for high quality electrically as well as mechanically. General Electric, Dept. 6A-201, Schenectady, N. Y.

WHEN shown different brands of electric lamps, housewives in six different cities were asked:

"If you were buying lamps, which of these would you accept?"

Of the 477 women interviewed, 382 said:

"I'd take the General Electric lamp."

This showed an 80 per cent preference for the G-E monogram as the mark of high quality on an electric device.

ADDITIONAL POINTS THAT HELP YOU SELL

Automatic Belt-tightener Base—

This exclusively G-E development automatically maintains just enough belt tension to prevent slippage. It increases customer satisfaction by reducing belt and bearing wear and lowering operating expense.

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Another feature of G-E motors that reduces service expense, for this rotor is an indestructible pressure casting that cannot become open-circuited or burn out.

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The right motor for home use—it is quiet-running and its operation does not interfere with radio reception.

070-181

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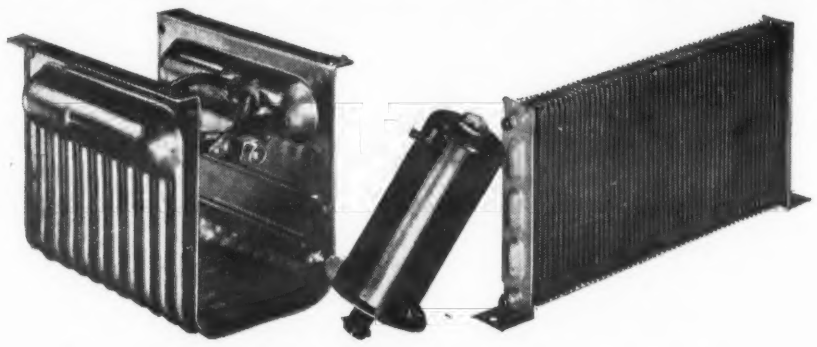

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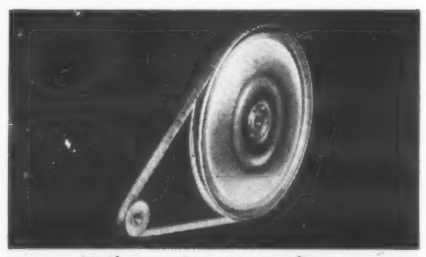

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1936 Brings First Air-Conditioning Rating Standards

(*Concluded from Page 17, Column 5*)

The first standards for rating and testing air conditioning equipment were announced by the Air Conditioning Manufacturers Association in October. These standards, designed for the use of manufacturers, engineers, salesmen, dealers, and users of air-conditioning equipment, defined the functions of air-conditioning equipment in standard terms for the industry.

Early in January of 1936, A.C.M.A. issued a report that air-conditioning sales had made an 80% gain in 1935. Sales of "complete" systems—those which cooled, humidified, dehumidified, circulated, cleaned, and heated the air—totaled $35,000,000.

UTILITY CONTROL

A move to stabilize and protect the industry through the facilities of a utility was announced in January when the San Joaquin Light & Power Co., Fresno, Calif., obtained permission from several manufacturers to inspect and improve installations made by their dealer outlets in the central station's territory.

Williams introduced its Air-O-Matic all-year units in January, cooling by means of a new absorption refrigerating unit and heating by low-pressure steam through indirect steam radiation.

The Edison Electric Institute published in January the first data on air conditioning system operating costs. C. E. Michels, of Union Electric Light & Power, St. Louis, chairman of the report committee, stated that air conditioning as an industry had progressed more in the past six years than electric refrigeration had in twice that time. The report cited a great increase in power load available to utilities.

BEST TEMPERATURES

Laboratory experiments under A.S.-H.V.E. sponsorship, announced in February, showed air conditioning temperatures of 70-75°, unless unusually extreme in relative humidity, to be most comfortable to the average person.

Little variation in the disappearance of sensible perspiration from human bodies was noticeable in rooms in which relative humidities reached 65%, and only a short time was required for complete disappearance of sensible perspiration in relative humidities of from 65 to 85%.

Kelvinator engaged the Peerless Ice Machine Co., Chicago, to manufacture its commercial cooling coils in March. The Frick Co., Waynesboro, Pa., added 15 and 20-ton low-pressure units to its line, and the Baker Ice Machine Co. started production of dual-mounted condensing units with automatic controls.

At the third annual Edison Electric Institute sales conference April 1, L. R. Boulware, vice president and general manager of Carrier, urged the industry to stop fighting over business at hand and do more creative selling in less competitive fields. Mr. Boulware predicted static or even higher prices on air-conditioning equipment in the future.

PATENT DECISION

On April 22, the U. S. Circuit Court of Appeals, sitting in New York, affirmed a district court decision invalidating Auditorium Conditioning Corp. patents on the by-pass system of air-conditioning installations.

The University of Illinois' First Conference on Air Conditioning reported early in May.

Features of the report were a forecast of better national health and longer life through the use of air conditioning, the opinion that mechanical refrigeration or ice was superior to the use of city water in reducing high humidities, and that filters in air conditioners stop 99% of hay fever pollen in the atmosphere from entering rooms.

Costs per ton-hour of refrigeration in air conditioning showed mechanical to cost 5.49 cents, city water 6.61 cents, and ice 18.56 cents.

Servel entered the "big machine" field in May with 15 and 20-ton units, both with multi-pass condensers.

KELVIN HOMES

Early in June, Kelvinator started construction of 100 "Kelvin Homes" in all parts of the country in cooperation with local utilities and building contractors to demonstrate the feasibility of complete air conditioning for low-cost homes in the $6,000 range.

Midway in June, Lipman announced a portable system of pre-cooling for airplanes to be used at airports while the planes were idle between hops. The Lipman pre-cooler, mounted on a small truck, supplied the interior of the plane with a sufficient quantity of cool air to last until the plane should ascend to cooler altitudes.

An A.C.M.A. Applications Code issued in June forbade the use of the terms "air conditioning" or "air conditioner" in connection with any products excepting those satisfying the association's minimum requirements of ventilation, air circulation, air cleaning, and heat transfer.

The Air Conditioning Bureau of Boston, formed in 1934 with only 25 members, announced a 1936 membership of 200. Dealers, manufacturers, utilities, installation contractors, architects, and users combined in the cooperative Boston association for the issuing of data, promoting sales, and the general welfare of the industry.

FOREIGN MARKET

On August 26, the NEWS editor presented a study of the foreign air conditioning field, and of prospects of the market for American-built air conditioning in foreign countries.

At the present, the report stated the market outside the United States is confined almost solely to Carrier, Frigidaire, York, Kelvinator, Servel, and Hall (a British concern).

Development of an entirely new type of distributing organization to handle air conditioning was predicted by the NEWS editor in the Nov. 1 issue. Pointing to the failure of the industry to meet expectations in expansion of sales, he stated that it will be an aggressive specialty selling group, backed by a sound engineering department and headed by an experienced business man with a knowledge of costs, that manufacturers eventually must find to handle air conditioning.

Early in November Airtemp placed an entirely self-contained 3-hp. conditioner on the market. Housed in a cabinet occupying a floor space only 20 by 33 inches, the new model introduced a reciprocating type radial compressor suspended on rubber mountings in the base of the cabinet.

San Antonio, Texas

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	During 1936 No.	During 1936 Hp.	Total No.	Total Hp.
Theaters and Auditorium	8	2,493	2	170	0	0	10	2,663
Department Stores	3	219	4	116.75	8	707.35	15	1,043.1
Clubs, etc.	1	14	1	3.5	5	59.8	7	77.3
Restaurants, Coffee Shops, and Cafeterias	6	675	2	44	2	19.1	10	738.1
Office Buildings	3	707	0	0	1	17	4	724
Individual Offices	6	9.5	8	20.5	7	9.75	21	39.75
Broadcasting Studio	1	6	0	0	0	0	1	6
Testing Laboratories	0	0	2	67.25	0	0	2	67.25
Banks	2	327	0	0	0	0	2	327
Beauty Parlors	2	21	1	6	0	0	3	27
Brokers	1	28	0	0	0	0	1	28
Hospitals	0	0	1	7	2	15	3	22
Hotels	0	0	1	532	1	9.6	2	541.6
Funeral Homes	0	0	1	13	0	0	1	13
Drug Stores	0	0	1	11	1	18	2	29
Residences	16	30	7	7	10	23.75	33	60.75
Total	**49**	**4,529.5**	**31**	**998**	**36**	**877.35**	**117**	**6,406.85**

El Paso, Texas

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	10 Mos., 1936 No.	10 Mos., 1936 Hp.	Total No.	Total Hp.
Theaters	4	290	1	17.5	1	15	6	322.5
Shoe Stores	0	0	0	0	1	7.5	1	7.5
Grocery Stores	0	0	1	3	2	10	3	13
Drug Stores	0	0	0	0	3	44	3	44
Office Buildings	0	0	0	0	1	20	1	20
Residences	0	0	4	6	2	4	6	10
Hospitals	0	0	0	0	1	20	1	20
Offices	1	23	3	9	1	1.5	5	33.5
Department Stores	1	20	0	0	1	10	2	30
Cocktail Bars	0	0	0	0	1	12	1	12
Cleaning Establishments	0	0	0	0	1	4	1	4
Telephone Company	1	15	1	35	0	0	2	50
Hotels	1	15	1	77	0	0	2	92
Funeral Homes	1	13	1	7.5	0	0	2	20.5
Bowling Alleys	1	30	0	0	0	0	1	30
Night Clubs	0	0	1	15	0	0	1	15
Total	**10**	**406**	**13**	**170**	**15**	**148**	**38**	**724**

Birmingham, Ala.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	11 Mos., 1936 No.	11 Mos., 1936 Hp.	Total No.	Total Hp.
Offices	8	17	5	36	10	48.5	23	101.5
Residences	5	38	3	4.6	10	14.25	18	56.85
Restaurants & Drug Stores	3	47	3	118	5	183	11	348
Retail Stores	4	159	7	765	3	13	14	937
Theaters	3	582	1	13	3	61.5	7	656.5
Automobile Show Rooms	0	0	1	13	0	0	1	13
Automobile Service Stations	0	0	1	1	0	0	1	1
Radio Studios	0	0	1	1	0	0	1	1
Hotel Guest Rooms	0	0	0	0	1	40	1	40
Industrial	1	2.5	0	0	0	0	1	2.5
Standby Railroad Cars	5	50	9	90	0	0	14	140
Barber Shops	0	0	0	0	1	3.25	1	3.25
Department Stores	0	0	0	0	8	168	8	168
Furriers	0	0	0	0	2	4.25	2	4.25
Miscellaneous	0	0	0	0	3	109	3	109
Total	**29**	**895.5**	**31**	**1,041.6**	**46**	**644.75**	**106**	**2,581.85**

Omaha, Nebr.

Classification	Prior to 1935 No.	Prior to 1935 Hp.	During 1935 No.	During 1935 Hp.	1936 to Dec. 15 No.	1936 to Dec. 15 Hp.	Total No.	Total Hp.
Commercial	13	118.5	7	155	36	894.5	56	1,168
Industrial	7	21	15	630	0	0	22	651
Residences	16	22.5	12	47	42	70	70	139.5
Restaurants	5	25.5	3	78	6	90.5	14	194
Hotels	4	77	2	185	3	148.5	9	410.5
Theaters	5	1,236.5	0	0	1	96.5	6	1,113
Miscellaneous	3	43	0	0	0	0	3	43
Total	**53**	**1,544**	**39**	**1,095**	**88**	**1,080**	**180**	**3,719**

St. Paul, Minn.

Classification	Total Through 1935 Mech. No.	Total Through 1935 Mech. Hp.	1936 Installations Mech. No.	1936 Installations Mech. Hp.	Total Through 1936 Mech. No.	Total Through 1936 Mech. Hp.	Total Through 1936 Water* No.	Total Through 1936 Water* Hp.
Restaurants	3	32	7	78	10	110	3	14
Theaters	0	0	0	0	0	0	13	295
Stores	5	34	1	3	6	37	1	1
Offices	20	69	8	26	28	95	2	2
Beauty Parlors	0	0	1	11	1	11	0	0
Funeral Homes	0	0	1	6	1	6	1	1
Hotels	0	0	2	24	2	24	4	110
Public Buildings	0	0	0	0	0	0	2	50
Banks	0	0	0	0	0	0	1	50
Residences	24	14	15	32	39	46	4	1
Hospitals	0	0	1	3	1	3	0	0
Airplanes	0	0	1	2	1	2	0	0
Total	**52**	**149**	**37**	**185**	**89**	**334**	**31**	**524**

Presented below is the second half of the paper which Willis H. Carrier delivered at the 1936 joint session of the A.S.R.E. and the A.S.H.V.E. recounting the progress of the air-conditioning industry in the 25 years of its development. Mr. Carrier's is probably the best-known name in the field, and he is popularly known as the "father of air conditioning."

The first half of this paper, giving the background of air conditioning prior to 1911, was published in the Jan. 6 "Air Conditioning Progress Number" of the NEWS. The present instalment traces the course of the art from 1911 to the present.

— AIR CONDITIONING ENGINEERING —

Carrier Summarizes Progress in Air Conditioning Since 1911

Having discussed the status of the art 25 years ago in relation to present practices, it is well to survey and analyze the great improvements that have taken place since that date:

1. Scientific measure of human comfort.

2. Improved heat transmission surface for heating and cooling.

3. Improved methods of heat removal (refrigeration) including,

a. New and improved types of refrigerating machines.

b. New refrigerant media.

4. Improvements in the methods and apparatus for air distribution and humidity control.

5. Improvements and simplification in the method of dust removal (air filters).

6. Adequate lowering of objectionable sound level of ventilation and air conditioning systems (sound absorbers).

7. Development of reliable low cost unitary cooling and air conditioning equipment.

8. Extension of the application of air conditioning to new fields.

Scientific Measure of Human Comfort

An important scientific contribution to the field of air conditioning has been the determination of the effect of temperature, humidity and air motion upon human comfort and upon efficiency of industrial workers. The earliest work done in the field in this country was that of Dr. E. V. Hill, Chicago, Ill., who first published a synthetic chart in which all the component factors of ventilation were analyzed and evaluated.

Among these was the relative effect of temperature and humidity. Dr. Hill had conducted a number of experiments in Chicago which indicated that the wet-bulb temperature was a controlling factor in sensation of warmth. The validity of this finding, under certain conditions, was questioned by a committee of the American Society of Heating and Ventilating Engineers, who were to pass upon the adoption of this chart.

As a result, it was decided that the newly established Research Laboratory of the Society should determine the facts regarding this important phase of ventilation. A series of carefully conducted research studies were made which have since become classical and accepted in all parts of the world as true measures of sensation of warmth, although the cooling power of the kata-thermometer, developed at an earlier period by Dr. Leonard Hill of England, is still preferred by some and is particularly useful in the study of ventilation conditions in deep mines.

The results obtained by the American Society of Heating and Ventilating Engineers are of the greatest value in the practical application of air conditioning, as they provide a definite measure of the factors producing comfort in an air conditioning installation, and permit definite standards to be established.

Improved Heat Transmission Surface for Heating and Cooling

The pioneer work in this field was done probably by L. C. Soule in connection with the author and other associates. The heat transmission surface was the first type of compact, highly efficient, light weight, non-corroding surface to be introduced and become commercially successful.

The development of a surface of this design had long been desired by air conditioning engineers and several attempts had been made to develop such a surface.

The first essential was a non-ferrous metal such as copper, brass or aluminum, which would not be affected by the moisture in air conditioning systems. Reheater coils standing in conditioning air corrode quickly, making it impossible to use wrought iron surfaces unless hot-dipped after formation at excessive cost.

Cast iron stood up well, but the rust forming on the surface often contaminated the air stream with iron oxide dust. Where such conditions could not be tolerated, it had to be sherardized at considerable cost and only then with partly satisfactory results.

WEIGHT OF METAL IMPORTANT

The weight and space occupied by wrought iron and cast iron heaters also were an important consideration, especially in the use of reheaters placed in the discharge area, the preferred practice in certain air-conditioning applications. If ferrous surfaces were employed for cooling coils, they had to be hot-dipped to prevent corrosion, and if direct expansion was to be employed they had to be welded, usually on the job, because of the great weight and bulk on the larger installations of such construction.

This was both expensive and unsatisfactory. A non-ferrous surface had to be provided with expensive materials, the cost of which if prime surface alone were employed would be prohibitive, or else construction would be flimsy and therefore unsatisfactory. This meant the adoption of some form of extended surface in which a maximum amount of surface could be provided with a minimum amount of material and still retain the full thickness and strength of the parts subjected to mechanical and expansion stresses.

STRUCTURAL PROBLEMS

The greatest problem was to provide a suitable assembly of the material for this purpose; which could easily be made hermetically tight and structurally strong and at the same time allow freedom for expansion and contraction; that would endure high pressure and water hammer; that would also permit ease of assembly of smaller units to create a larger unit and which should be provided with standard casings to permit ease and accuracy of assembly in the field.

The development of a surface having these desirable characteristics was first accomplished with some success in 1922 and presented to the public in 1924. There have been many improvements in the original coil construction, so that for the last 5 years or more this and other competitive products have met all these stringent requirements, providing a surface fully adaptable to the purposes of air conditioning at a far lower installed cost than the less satisfactory construction available in 1911.

This development provided a low cost, highly dependable surface which made practicable the design of unit air conditioners and coolers. It should be considered one of the basic achievements in the air conditioning field since 1911.

The complicated calculations for determining the dehumidifying effect and heat transfer capacity of this surface used in cooling coils have been standardized to give results of great accuracy. The method of calculation follows exactly the procedure given in the 1911 paper on Air Conditioning Apparatus.

Improved Methods of Heat Removal

New and Improved Types of Refrigerating Machines

In 1911 and for several years thereafter, air conditioning knew no practical methods of water cooling except to direct the water over a series of expansion coils, known as Baudelot coils, into a tank. This required the use of an insulated space or Baudelot room, usually separate from the equipment. This arrangement was not only cumbersome but expensive. At that time, it was the only satisfactory method of cooling water.

Another method which prevailed where carbon dioxide was used was to place coils in the spray chamber of the air washer with the addition of flooding nozzles. This design resulted in a combination of the old *bunker coil* type of air cooling with the later spray cooling.

The success of this arrangement depended upon hand manipulation of expansion valves and was used only in comfort cooling where the variations in humidity were completely disregarded. The control of the load with this equipment presented difficulties, as the air-conditioning equipment was of necessity located at some distance from the refrigerating equipment.

PRE-AUTOMATIC CONTROLS

Hand operation of expansion valves was a practical obstacle which was unsatisfactorily met by giving a fixed setting day by day and running the refrigerating machine at full capacity. It was wasteful of power and gave no control of humidity conditions. Automatic control was not used on this equipment and in fact was impractical.

The operation with Baudelot coils, while permitting a perfect humidity control by the *dew point* method, was still open to the objection to hand manipulation of expansion valves and consequent waste in power consumption. Baudelot coils were allowed generally to ice-up at low loads and the suction pressure permitted to drop.

Air-conditioning engineers had long realized the need of some improved type of refrigeration which would automatically respond first to the demands made by varying loads in the air-conditioning system, and second to directly cooling the water in the circuit to a definite point without danger of freezing, and thus avoid the use of the expensive, cumbersome, and otherwise objectionable Baudelot cooling room.

New Refrigerant Media

If a single factor were to be chosen as having the most outstanding influence in bringing about the widespread adoption of air conditioning and summer cooling existing today, it is probable that development of new and improved refrigerants would be given this honor.

Early in the industry, engineers appreciated the hazards in the use of ammonia or sulphur dioxide to which most refrigerating machines were adapted, where a break in the pipe would immediately convey asphyxiating gases to occupied spaces. For this reason the use of direct expansion coils was precluded, and even with the use of Baudelot coils these gases would be picked up by the water and disseminated into the air by the spray.

Practically the only safe protection was to use an intervening medium such as brine with an intercooler to cool the water. This naturally was expensive to install and operate since it lowered the efficiency of the refrigerating cycle.

Carbon dioxide, generally acknowledged as a relatively safe refrigerant, presented great operating difficulties in an air-conditioning system. The power consumption and quantity of condenser water were generally excessive, the automatic high operating pressures required heavy and expensive fittings, producing large refrigerant losses and rendered automatic control impracticable.

REFRIGERATION INADEQUATE

It will readily be seen that the state of the refrigeration art 25 years ago was most unsatisfactory from a standpoint of rapid promotion and widespread use of air conditioning for human comfort.

About the year 1902, LeBlanc in France and Parsons in England invented and independently patented, a steam ejector system of refrigeration in which water was made to boil at temperatures down to and below freezing by the use of brine instead of water.

About 1910 an attempt was made by the Westinghouse Co. to introduce the LeBlanc process in this country. In 1912 the author and his associates investigated this system in an attempt to adapt it to air conditioning. Un-

(Continued on Page 20, Column 1)

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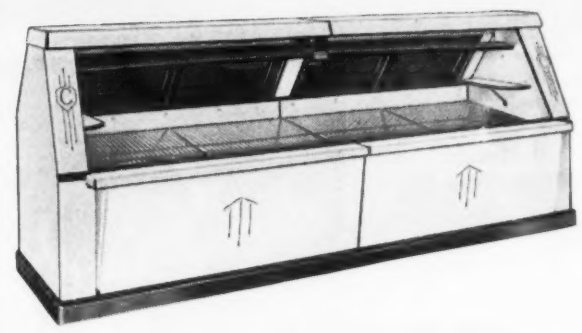

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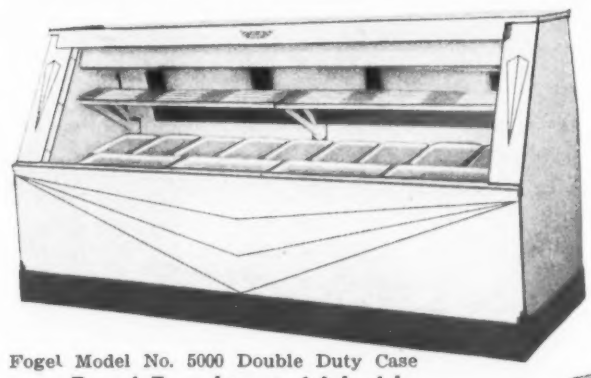

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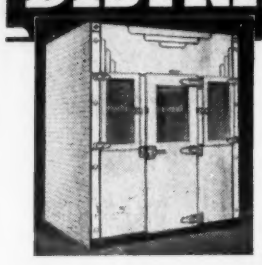

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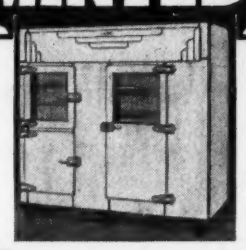

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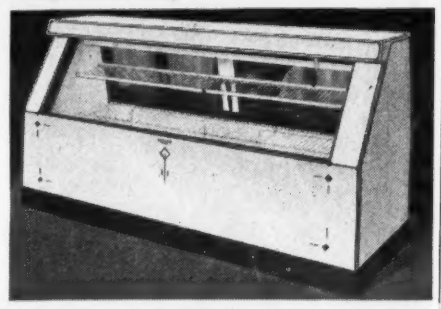

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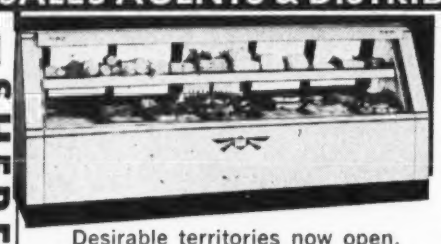

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Refrigerator Cases of all kinds, Market Coolers, Reach-in Boxes, Meat Racks, Porcelain Partitions, etc.

Use the complete Sherer line to maintain your volume and profits as the demand for household boxes tapers off. Write us today.

Desirable territories now open. Write us for details.

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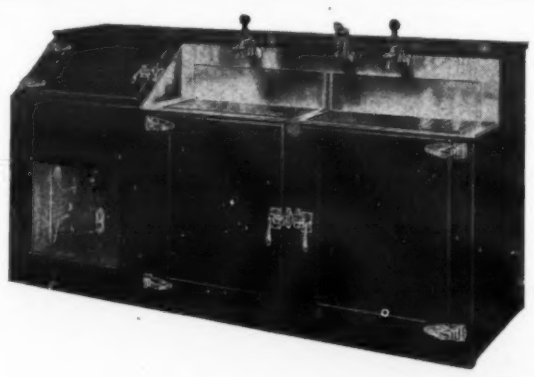

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Budd Mfg. Co. Conditions Company Dining Room

PHILADELPHIA — To provide healthfully comfortable quarters for workers during their leisure hours, the Edward G. Budd Mfg. Co., manufacturer of automobile bodies, streamline trains, and other heavy machinery, has installed air-conditioning equipment in both employe and executive dining rooms.

Complete equipment includes a 3-hp. air-conditioning unit and a 30-hp. condensing unit.

Air is distributed to the dining rooms through ducts located high along the side walls.

Installation of the conditioning system in the dining rooms has had a definitely wholesome effect on the health and general attitude of employes, officials of the company report.

Leaside Concern to Distribute Wood Products in Canada

DETROIT—Engineering Industries, Ltd., Dominion Building, Leaside, Ontario, Canada, has been appointed Canadian distributor for heating and air-conditioning products of Gar Wood Industries, Inc., reports Frank H. Dewey, manager of Gar Wood's air-conditioning division.

Members of Engineering Industries, Ltd., are: Frank L. Argue, Donald M. Campbell, and Robert F. Davenport.

Pfohl Named Sales Manager For Coleman-Stratton

BUFFALO—Otto A. Pfohl, formerly chief engineer in this territory for S. F. Bowser & Co., Inc., has been appointed general sales manager of Coleman-Stratton, Inc., distributor for Airtemp in western New York and northwestern Pennsylvania.

Blocker to Distribute York in Newark

NEWARK—The Blocker Air Conditioning Corp. has been appointed distributor of York commercial refrigeration and air-conditioning equipment in this territory.

Adaptation of Air Conditioning to Human Comfort Related by Carrier

(Continued from Page 19, Column 3)

fortunately, at that time, the system was not sufficiently perfected to make it economical for high temperature refrigeration—cooling the spray water direct, as the author had in mind. The cost was about double that of the corresponding ammonia system and the cost of operation was in about the same proportion, so that with regret it was abandoned. Air conditioning at this period, had insufficient volume to warrant the improvements which since have made it feasible.

SAFE REFRIGERANTS

In 1918 the author first saw the possibility of using low-pressure non-hazardous refrigerants, and a series of experiments were undertaken to develop a suitable type of compression system. After considerable experimentation with other methods a centrifugal machine was finally chosen as the best means for handling such refrigerants. It was necessary first to find a low pressure refrigerant of suitable characteristics in relation to hazard, pressure, and corrosion.

The construction of the centrifugal compressor was at that time well advanced both in this country and abroad, and designs were available giving as high as 78 per cent mechanical efficiency. A greater use of this type of machine was made abroad than here. To adapt the centrifugal compressor to a refrigerant, however, involved many serious problems.

Two of the most important were lubrication and the seal. Up to this time no seal had been devised which would be effective on a centrifugal compressor handling a refrigerant gas. In 1921 a satisfactory design for the seal was finally completed and, with certain modifications, is the same as employed successfully today.

LUBRICATION PROBLEMS

Lubrication problems were studied and developed on the first experimental machine in 1922, which was successfully placed in operation in Newark in that year. It is interesting to note that this machine was later sold and is still in commercial operation for air conditioning.

This innovation in refrigeration opened up entirely new possibilities in the field of air conditioning, as it at once gave safety, provided for a varying air conditioning load at substantially constant temperature, was much more compact than the previous system, permitting its introduction in many places where the older type of refrigeration could not be employed, and was easily made completely automatic. In other words it seemed at that time to answer completely the engineer's requirements for the ideal method of cooling for air conditioning.

This was the first innovation employing a new refrigerant and system primarily suitable for air conditioning. During the subsequent period there was a continued development using methyl chloride for small unitary automatic refrigeration and starting with the household unit. Some methyl chloride machines later were employed in air conditioning, but few of these are now in use.

DEVELOPMENT OF FREON

The next and possibly the greatest stride was the development by Thomas Midgley, Jr., of a new series of refrigerants which were particularly adaptable to the reciprocating type of refrigeration machine. The best known of these refrigerants is dichlorodifluoromethane (CCl_2F_2). This gave a safe refrigerant for use not only in large machines but more particularly in a new range of reciprocating machines of smaller capacities, where there was a gap which had previously been entirely unfilled.

This refrigerant was made available to the public in 1931. Not only did it make application of reciprocating refrigerating machines to air conditioning safe, but in the smaller size machines it permitted a production and installation cost of practically half of that of ammonia machines of similar capacity.

It also allowed the use of non-ferrous metals of moderate strength in coolers and condensers. It enabled the use of direct expansion coils of the extended surface type directly in the air stream. Thus at one stroke was made practical a great extension of air conditioning to smaller installations, where undoubtedly the greatest volume of business is ultimately available.

USING NEW REFRIGERANTS

In the last 5 years great improvements have been made in the mechanical adaption of refrigerating machines to these new refrigerants. For smaller machines, mechanical seals are employed rather than stuffing boxes. Efficiencies have been greatly improved. Lubrication has been perfected and automatic controls are now functioning with great reliability. Automatic expansion valves are designed and constructed for the new refrigerant's low working pressures. The suitable non-ferrous metals have permitted a much more compact design, essential in unitary equipment.

Recently the steam ejector water cooler has had a successful development resulting in a very simple and convenient arrangement for use where steam is available and where there is ample low cost water supply. While this system, in many cases, has disadvantages over the modern compression systems, it has been most satisfactory in marine work and on railroads.

It is used extensively in conditioning of railroad coaches where a sufficient quantity of high pressure steam is always available and the condenser problem is solved by the atmospheric condenser operating on the evaporative principle. For railroad air conditioning each car requires its own power plant and the steam ejector is the simplest type of compression that may be employed.

Since the invention of the LeBlanc process there have been enormous improvements made in the efficiency of the steam ejector resulting in fair economy. There has been as well a considerable simplification which has reduced the cost and increased operativeness of the system. This is particularly noticeable in its application to railroad cars. It is only by such refinement that the equipment has been brought within the bounds of competitive practice.

CENTRIFUGAL COMPRESSOR

Another interesting development is that of the water-vapor centrifugal compressor which is similar in principle to the LeBlanc process with the exception that a centrifugal compressor takes the place of the steam ejector. This system requires smaller condenser surface and much less condensing water than the steam jet system because of the greatly reduced volume of vapor to be handled.

Both of these systems have the practical advantage that the water is cooled directly by its own evaporation rather than requiring a heat interchanger, as in other systems of refrigeration. Naturally this effects a considerable economy in the thermal cycle.

The principal difficulty to be surmounted in the mechanical compression of water-vapor is the enormous volume to be handled, as well as the great centrifugal effect required owing to the extremely low specific density of water-vapor as compared with other refrigerants employed in centrifugal equipment. From an engineering standpoint this is a most astounding achievement.

Improvements in Method & Apparatus for Air Distribution & Humidity Control

The former method of ventilation for ordinary rooms was to discharge the air through plain registers in the side walls, while for auditoriums the preferred construction was to discharge the air upward from a plenum chamber through mushroom ventilators underneath the seats. This was known as the *upward* system of auditorium ventilation. The first improvement occurred about 1923 when the overhead (or downward) system first was successfully applied in a Los Angeles theater.

The air was distributed by means of a series of outlets in the ceiling discharging vertically downward against ornamental plaques. In this way the air was diffused horizontally and radially from each outlet forming a blanket of cooled conditioned air, which, by gravity, settled uniformly toward the floor, thus giving a uniform temperature from floor to ceiling throughout the auditorium.

It is interesting to note that this type of outlet was first devised in 1913 to meet special ventilation requirements in a tobacco stemmery in Richmond, where a serious dust problem required large quantities of saturated air to be discharged, without drafts, into the room. This principle is most prevalent today for air conditioning and ventilation. It was a complete reversal of the older practice.

In the Senate and House of Representatives at the Capitol building in Washington, D. C., this system now supplants the older system. The success of this method of distribution has been completely established by its general adoption.

EJECTOR AIR DISTRIBUTION

Another type of ventilation which has been developed in the last 20 years, most successfully applied to theaters and other buildings, is the ejector system of air distribution. This method employs a high velocity jet, formed by relatively high pressure on a nozzle outlet. The air is distributed horizontally, high over the heads of the occupants of the room, and from the back of the auditorium toward the front.

The effect of such a series of jets, discharging all in one direction, is to entrain a large volume of air, producing a secondary circulation, and a thorough mixture of highly conditioned air with recirculated room air. The secondary air circulation covers a large area and is uniformly discharged at extremely low velocity. This arrangement gives uniform temperatures within the theater and avoids objectionable drafts. The size of the nozzles may be modified to secure any length of blow required.

This system has many advantages, the principal one being that it permits use of relatively small quantities of highly conditioned air at low temperature which reduces duct sizes and cost of power for fan operation. It is interesting to note that this system was first devised, not for air conditioning of human comfort, but for improvement in the method of air circulation in the drying of materials. It was successfully applied by A. E. Stacey in the design of what is known to the trade as the *blue ribbon outlet*. This outlet is placed in the room in the form of a register and has horizontal or vertical slots which are formed in the shape of true rectangular nozzles. These nozzles cause ample entrainment and permit the principle of the ejector outlet to be used in rooms of any size, giving greatly improved distribution and a low temperature differential between the air stream and the room.

These effects are essential to avoid localized cold spots and objectionable drafts. The quantity of air may be regulated by closing off any desired portion of the discharge area.

(Continued on Page 21, Column 1)

How Air Conditioning May Extend Life of Library Books Outlined in Research Foundation Study

NEW YORK CITY—The life of books and manuscripts can be extended through the use of air conditioning to control temperature and humidity in libraries, according to a study made public by the Temperature Research Foundation of Kelvinator Corp.

Leading librarians throughout the country were queried to determine proper heating and ventilating conditions necessary for the efficient care of library material.

Optimum temperature for the library was set at 68° to 75° F., and the humidity at 55 to 65%. For book stacks a slightly lower temperature and humidity is preferred.

Libraries replying to the survey agreed that air conditioning eliminates the disastrous effects of varying and excessive heat and humidity which frequently result in the deterioration of books. Excessive heat dries the glue and loosens leather bindings, it was pointed out, while a high degree of relative humidity permits the growth of moulds, causes offensive odors and affects paper and bindings.

Newspapers and manuscripts are unusually susceptible to these extremes, reports received by the foundation show.

The maintenance of proper temperatures and humidities in libraries is further complicated by local atmospheric conditions, it was found, when a library in Miami, is faced with the problem of excessive humidity, while a Denver library is forced to meet conditions of extreme heat and dryness.

Extension of Air Conditioning into New Fields Outlined by Carrier

(Continued from Page 20, Column 3)

ROOM CABINETS

Another application of this same principle is used in individual room cabinets in which the air is discharged upward toward the ceiling. These cabinets are usually placed under windows and are provided with an indirect, light weight heating surface in which steam or hot water can be controlled as in an ordinary radiator. The recirculated air induced by the ejector action is drawn through this heating element contained within the cabinet.

When provided with small volumes of conditioned air at about ¼ in. pressure, the cabinet will ventilate, cool, heat and control the humidity of the room as required. The volume of air supplied to the room also is under manual control, so that it may be reduced any amount or closed off completely. This system has proven satisfactory in application to office buildings and provides an ideal system of air conditioning and heating.

Varying volumes of conditioned air in a large number of rooms connected to one system are provided for by the use of a static pressure regulator. This maintains a uniform pressure in the main duct and branches, regardless of the amount of air delivered, so that the ejector action is maintained uniformly effective. This is an important development in exact control and satisfactory operation of air conditioning and ventilating systems.

Another important improvement made in air distribution is a register which gives positive direction and distribution of air. The cold air, if introduced horizontally, is deflected upward at a slight angle toward the ceiling, assisting in the mixture and diffusion with room air. Still another form of diffuser is one which may be made to discharge the air at any vertical or horizontal angle and, at the same time, spread or diffuse it radially. This diffuser has many important applications where the exact distribution desired cannot be determined before installation.

BY-PASS CONTROLS

Perhaps the greatest contribution to the art of air conditioning in the last 25 years has been the system of by-pass control devised by L. L. Lewis and improved by W. L. Fleisher. This process, in conjuction with artificial cooling, solves the problem of independent control of temperature and humidity of an enclosure. In some of the older attempts at cooling, humidity was ignored, and the temperature of the air introduced was varied by reduction of refrigeration effect upon the air itself.

In such a system it is obvious that when small cooling effects are required there will be little reduction of air temperature with corresponding increase in relative humidity. In other words, when the temperature of the room was controlled by this method, the humidity would vary from possibly 50% to a maximum of over 80% under certain conditions of operation. It is obvious that with this method there was no real control over effective temperature.

Moreover, abnormally humid air is objectionable from a comfort standpoint because it does not remove perspiration. The ideal effect in air conditioning is to prevent or remove sensible perspiration without too great a lowering of temperature. The desirable range of humidity for human comfort lies between 40 and 60% and is, of course, related to the temperature as determined by the Comfort Chart. With automatic temperature control, a uniform as well as low relative humidity is an essential of true air conditioning for human comfort.

Previous to the advent of air conditioning for human comfort, it had been the practice in industrial installations to vary the volume of air introduced into the room in order to control the temperature without affecting the relative humidity. The relative humidity was determined by the relation of the dew point of the air to the room temperature. Another method often used supplementary to the above was to add heat artificially, that is, to maintain a constant heat load regardless of the requirements.

These methods hardly could be tolerated in air conditioning for human comfort. In the first place, in an auditorium a constant air volume is desired because any change in air volume causes a change in distribution which is objectionable. Second, supplementary heat is frequently not available and is undesirable because of unnecessary load imposed upon the refrigerating system at an increase in operating cost.

It is permissible, from a ventilation standpoint, and also necessary for reasons of economy, that a considerable percentage of air be handled in the ventilation system. Advantage of this fact is taken to by-pass a varying quantity of return air around the conditioner. By varying the ratio of the amount of returned air by-passed to the total amount passed through the conditioner, it is possible to maintain a constant dew point at the conditioner and at the same time increase or decrease the amount of conditioned air without affecting the total volume of air circulated.

This permitted varying the cooling effect according to the demand, and at the same time maintaining a constant dew point. A reasonably accurate control of relative humidity within the enclosure may be obtained by this method, which is now generally employed in all larger air conditioning installations.

Improvement and Simplification In the Method of Dust Removal

In addition to the air washing effected by the air conditioner, additional cleaning of air for ventilation purposes is quite generally provided by various types of air filters. Filters operate on two distinct principles, first, by actual filtration through a porous substance such as specially prepared pulp paper which strains out and entrains the dirt, and second, by use of units or sections containing a filler of some character which is coated with oil or other viscous substance, providing a tortuous passage through which the air passes. The impingement of the dirt particles upon the viscous surfaces provides the necessary cleaning action required.

The latter filters are of two types: first, the permanent type, which requires servicing and cleaning, and second, the *throw-away* type, constructed of especially cheap material so that it may be discarded when it has become filled with dirt. There also are filters which are automatically cleaned which are of a more elaborate construction.

Modern air filters are effective in the removal of dust particles, but are inefficient in removal of smoke or fume. Their value and effectiveness were spectacularly demonstrated about a year ago, during the great dust storms that prevailed in the West.

Air conditioned buildings and railroad cars provided with dust filters went through these storms without any serious inconvenience, while other buildings and cars not so provided were almost overwhelmed with dust and subjected to great expense for renovation. The air filter has become a permanent part of a modern air conditioning system and will probably continue to be improved from a standpoint of effectiveness, installation and maintenance cost.

Lowering of Objectionable Sound Levels in Air-Conditioning Systems

Until the advent of air conditioning for human comfort within the last few years, and particularly since application of air conditioning to sound studios and broadcasting stations, little attention had been directed to the subject of noise in the ventilating system. The noise problem was always obvious and frequently so objectionable that it was found impractical to operate the system after installation.

This condition could not be tolerated in sound studios, which came with the talking movies, nor could it be tolerated in the broadcasting studios, which must be cooled and ventilated and *must* be quiet.

This led to an early study, by air conditioning engineers, of sound prevention and absorption. Quieter ventilation equipment was demanded, and to a degree, obtained, but principally the advance was made through a new technique of sound absorption, which has been made so perfect that the starting up or shutting down of the ventilating equipment cannot be detected within the quietest ventilated space.

THEORY OF SOUND ABSORPTION

The theory of sound absorption and the exact calculation of degree of sound absorption has been quite fully developed. Coefficients for various types of sound absorbers are accurately determined experimentally so that today the level of sound effects from a ventilating system can be calculated as exactly as the pressure drop in air ducts in the system.

One of the most successful types of sound absorbers is of cellular construction made up of relatively small rectangular tubes of sound absorbing material nested in parallel to form a unit. These sound absorbers are interposed between the room openings and the ventilating equipment. Outstanding examples of an application of sound absorbers of this character are in the Capitol at Washington, D. C., and the National Broadcasting Studios at Radio City, New York.

The proper utilization of sound absorption methods makes possible application of air conditioning to homes and offices where otherwise air conditioning applications could only substitute one discomfort for another.

Development of Unitary Cooling and Air-Conditioning Equipment

The development of standardized unitary air conditioning equipment of various sizes, which can be completely assembled at the factory and easily installed, stands as a real achievement of the last 5 years of this quarter century. This has resulted from the availability of low cost, completely automatic refrigerating machines designed for the new and safe refrigerants, and also from the availability of comfort, light weight heat transfer surface.

These units are of various types but are all designed to meet the need for a low cost installation which will require a minimum of supervision and servicing. They are especially adapted to use in small restaurants, stores, shops, isolated offices, etc. With the demand for such a unit provided there has opened up one of the largest potential markets for commercial air conditioning. This market has been expanding with great rapidity within the last 3 years.

Extension of Air Conditioning To New Fields

The last quarter century has been particularly notable for the extension of the air conditioning industry into the field of cooling for comfort. The public first experienced the effects of air conditioning in the successful theater installations within the last 15 years, but perhaps the greatest aid to public acceptance has been the wholesale adoption of air conditioning by the railroads during the last 5 years.

The rapidly growing and widespread use of air conditioning is being brought about by the advances in design and materials which make it possible to demonstrate to the small commercial user that air conditioning is a paying investment.

RAILWAY CONDITIONING

The first demonstration of the possibility of cooling a railway passenger car was made personally by the author at the Baltimore and Ohio shops in 1929. In 1930 two dining cars were equipped with successful air conditioning systems, one on the Baltimore and Ohio and the other on the Santa Fe. The following year three other installations were made.

All of these early installations used ammonia, as no other satisfactory refrigerant was then available, and special precautions had to be taken against hazards in the use of this refrigerant. In the following year dichlorodifluoromethane became available and there was also developed a satisfactory system employing a steam ejector and water as the refrigerant.

Both of these systems have received wide acceptance on nearly all the principal railroads through the United States. There are a large number of

(Concluded on Page 22, Column 2)

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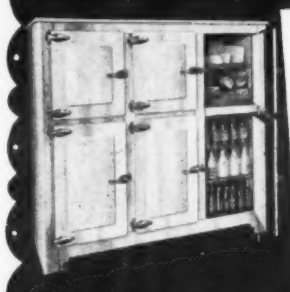

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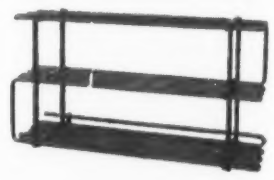

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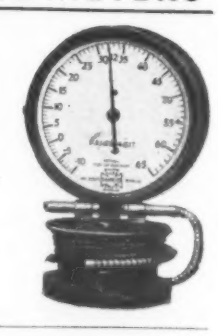

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Chicago Shield Introduces Serviceman's Fume Kit

CHICAGO—Introduced recently by Chicago Eye Shield Co. is a "Refrigeration Serviceman's Healthguard Fume Kit" which is so constructed that the cartridge can be interchanged in accordance with the kind of refrigerant gas that is found in any system.

The mask is of the light, respirator type, and self-contained in one facepiece. It affords 3 to 4 minutes protection to the wearer in dangerous concentrations of either ammonia, sulphur dioxide, or methyl chloride, affording ample time to open windows and take cary of ordinary leaks.

In concentrations of the gas which cause irritation but which are not dangerous to health, the mask may be worn for a considerable period without any irritation to the wearer.

Extension of Air Conditioning to Homes Recounted

(*Concluded from Page 21, Column 3*)

cars being operated with the steam ejector system of refrigeration for air conditioning on the South Manchurian Railway. As far as known, this is the only important installation anywhere outside of the United States and Mexico.

APPLICATION TO MINES

A recent notable extension of the art is the application to mines. A trial installation was made in the Morro Velho Gold Mines at St. John del Rey, Brazil, which was reported in the year 1922. By this application the working conditions in the mines were considerably improved. In 1929 this installation was augmented by an addition of centrifugal refrigerating machines and spray type air conditioners, located at the 6,000 ft level. This latter installation has proven most effective, since it controls the temperature at the working level and permits the extension to any depth within the range of practical cost of mechanical operation.

More recently, in the Robinson Deep, at Johannesburg, South Africa, a 2,000-ton installation was made for conditioning of the 400,000 cu. ft. of air per minute supplied to this mine. Later it is anticipated that booster installations will be made in the mine at the lower levels. The present depth of this mine is about 8,500 ft. and at this exploratory depth economic mining is impracticable without air conditioning, owing to the excessive heat.

With air conditioning it is expected that the practical working depth of this mine can be increased many thousand feet. The Rand Gold Field in which this mine is situated at present yields over 50% of the world's gold supply, and an increase of the potential yield of this rich district by at least 50%, through air conditioning, is of the greatest significance in maintaining a future stability in the world's economics. This application of air conditioning may eventually have greater influence on world advancement and prosperity than all other applications of air conditioning combined.

HOMES AND PRIVATE OFFICES

Air-conditioning installations within homes and private offices are not yet numerous; but equipment is now provided which will satisfactorily meet the demands of this field. The most recent contribution is a portable air cooling unit which can be plugged into a light socket, without any other connections.

This employs an air-cooled condenser with a motor driven dichlorodifluoromethane compressor in the air conditioning cabinet. The greatest difficulties to surmount in this type of equipment are noise and improper ventilation. It is believed that these obstacles have been largely overcome in recent designs.

It is probable that the greatest strides in the general application of air conditioning have been made in the last half of the quarter century. Further improvements will be brought about probably by perfection of details of equipment now already available.

SUMMARY OF PROGRESS

In retrospect we see the progress of air conditioning development marked off in decades. 1901 may be said to mark the end of what might be termed The Azoic Age of air conditioning. That is the age in which there had been no development in the field either accomplished or begun. Ten years later, in 1911, air conditioning was acknowledged as a new art by the engineering profession.

By 1921 the first successful modern type of installation for public comfort was designed. The beginning of the development of unitary equipment extending the benefits of air conditioning to small users came in 1931. Without thought of prophecy the year 1941 can be anticipated as marking the probable beginning of commercial success and public acceptance of complete air conditioning in the residential field.

In conclusion, appropriate recognition must be directed to the contributions to this development by all branches of the engineering profession. Continued interest and cooperation in development and refinement will accelerate engineering and commercial achievement with the resultant benefits to the public.

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PATENTS

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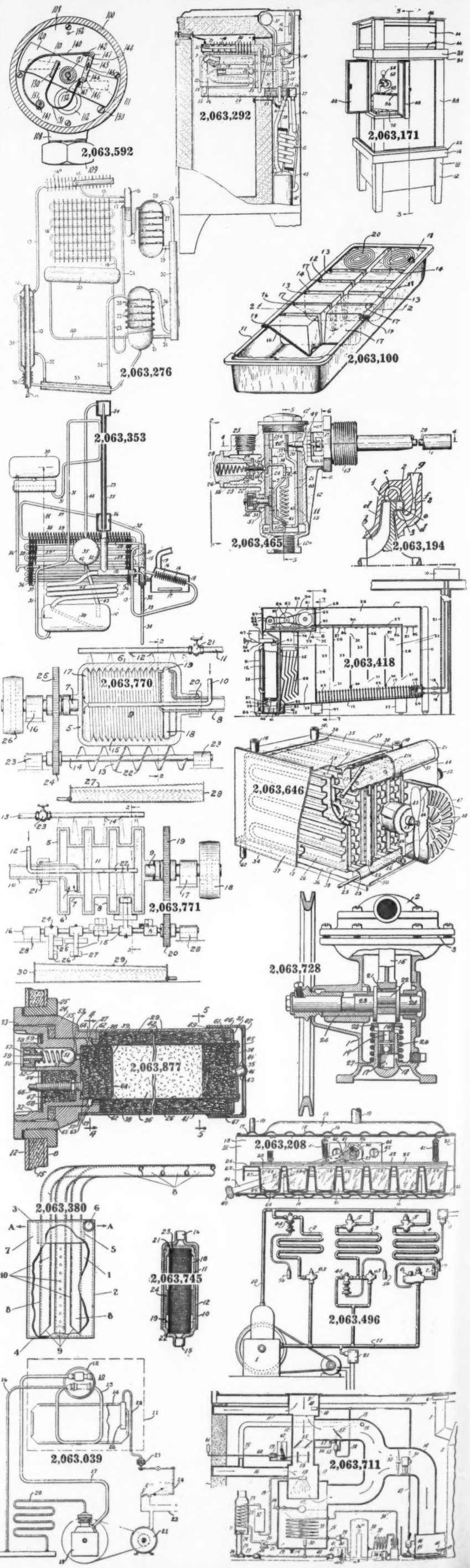

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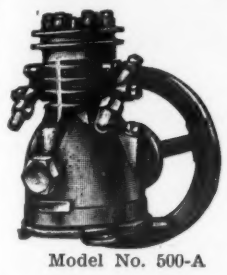
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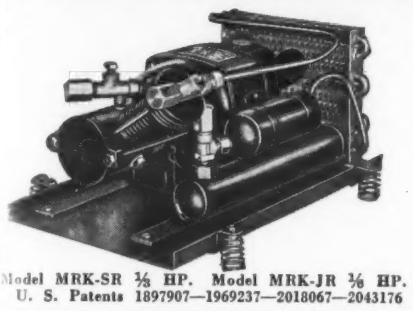
Model MRK-SR ⅛ HP. Model MRK-JR ⅛ HP.
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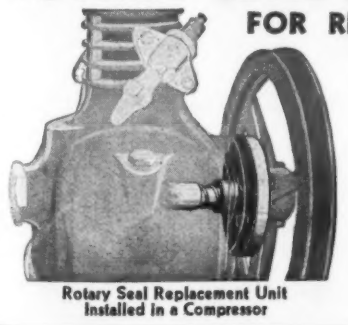
FOR REFRIGERATOR COMPRESSORS

Rotary Seal Replacement Unit Installed in a Compressor
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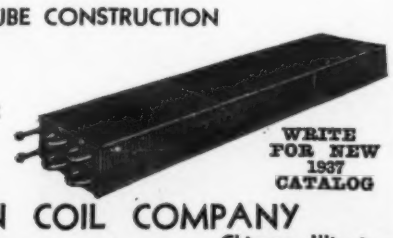
WRITE FOR NEW 1937 CATALOG
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Refrigerant Stocks Now Located in South

WEST NORFOLK, Va.—A warehouse stock of Virginia Smelting Co. sulphur dioxide and methyl chloride refrigerants has been established with Riverside Ice & Coal Co., Macon, Ga., according to announcement by Virginia Smelting officials.

The stock will be handled by the company's Atlanta distributor, Leo S. Bosarge.

Appointment of East Tennessee Electric Co., Knoxville, as distributor of Virginia Smelting Co. products was also announced.

Maloof Opens Service Firm in New London

NEW LONDON, Conn.—A. L. Maloof has opened the Thames Refrigeration Service Co., here. This concern handles repair and reconditioning service on all makes of mechanical refrigeration.

Perfection Mattress Co. Quits as Distributor

BIRMINGHAM, Ala.—The Perfection Mattress & Spring Co. of Birmingham, distributor of Crosley, Universal and other lines of electrical equipment, is retiring from the electric appliance business, announced F. M. Jackson, Jr. This will permit concentration on the mattress and spring business, in which the company is primarily interested.

COMMERCIAL REFRIGERATION SERVICE

Service & Adjustment Of End Bunker Type Display Cases

Chapter 7—Evaporators and Refrigerant Controls (Cont.)

BY K. M. NEWCUM

Many of the several sizes and types of Frigidaire commercial flooded evaporators shown in Fig. 105. (Other Frigidaire commercial low sides, and tables giving data on refrigerant and oil charge, will be published next week.)

Purpose of illustrating all these evaporators is to enable the service man to identify these evaporators by size and appearance where they are not provided with an identification tag.

Fig. 107 shows the back view of an end bunker case with fin coils installed. There are many such installations still in service today.

This counter or case is what is termed a low temperature case in that it has three thicknesses of plate glass in the front and has from 4 inches to 6 inches of corkboard insulation in the back around the bunkers and in the bottom.

The service man's first problem is always to get the system functioning properly from a mechanical standpoint. The coils must be properly installed and connected to the condenser and put into operation. The motor control, which in most of these older installations is low pressure, must be adjusted to as near certain known settings as possible. The system must then operate for a day or two and be rechecked for proper operation.

If upon rechecking the system is found to be operating satisfactorily, that is, it has ample refrigerant, etc., and is running on regular cycles, the service man feels that his job is well done. However, the purpose of installing mechanical refrigeration is to maintain satisfactory refrigeration temperatures in the refrigerator. The temperature in all parts of the case is taken. Often the merchant has already taken these temperatures and advises that at the bottom of the case near the evaporators the temperature is satisfactory, say for example, around 37° average, but on the top shelf in the center of the case the temperature is high, say for example 44° to 50°.

The merchant naturally wants the case temperature lowered to keep the center of the top shelf around 38° to 42° as he realizes this is the most logical place to display the choice and more expensive cuts of fresh meats.

This is where real knowledge of refrigeration is handy—in explaining the function of the system to the merchant.

The service man realizes from experience that the control is adjusted to maintain what is known as a defrosting cycle. That is, the evaporator collects frost during the "on cycle."

He also knows that if the control is set to a colder position, to reduce the temperature in the case, that the off cycle will be shortened and the on cycle lengthened to a point where the coils will not defrost during the off cycle. In such an instance the coils collect a thick coating of frost in a few days which materially reduces their capacity, requiring a shut down period for manual defrosting.

The net result is that the service man will set the control to the lowest possible degree to keep the case as cold as possible and still allow for a natural defrosting cycle.

If the merchant is then satisfied with his case temperature the service man's worries are over until some mechanical trouble develops.

If, however, the merchant insists upon lower temperatures, the service man has no alternative but to set the control lower or colder, in which case the merchant will have to defrost at regular intervals by shutting the machine down for several hours every few days especially during the hot weather.

The reason for all of this is purely a matter of circulation. The warm air from the top of the case passes over the coils and is cooled. This chilled air being heavier than warm air drops to the bottom of the bunker and is replaced by more warm air. This sets up a natural circulation.

This colder air now at the bottom of the case picks up heat, from leakage through the glass, opening of the doors, and from foodstuffs in the case.

As this air is heated it becomes lighter and rises to the top of the case. It continues to pick up heat enroute to the top of the case consequently by the time it has reached the top shelf, its temperature has risen from 7° to 10° above what it was at the bottom of the bunker.

Fin Coils in End Bunker Case

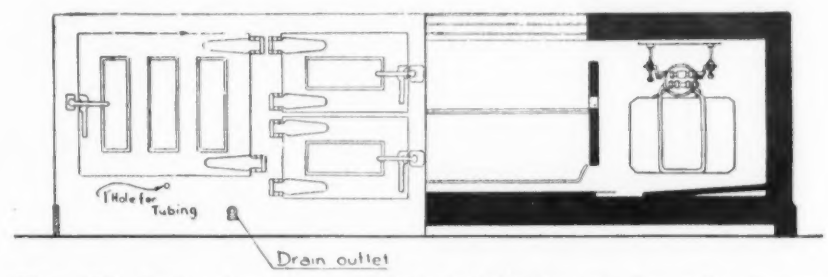
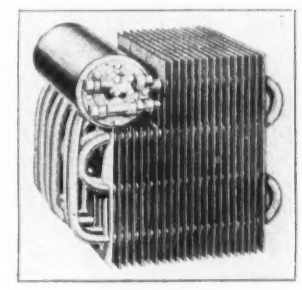
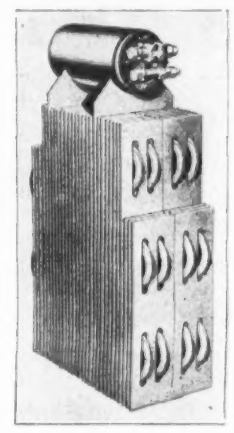
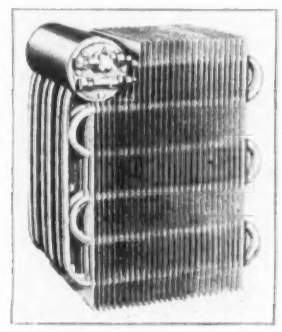


Fig. 107—Back view of a typical installation of fin coils in an end bunker type display case.

Types of Frigidaire Commercial Evaporators


15-F


26-F


19-F

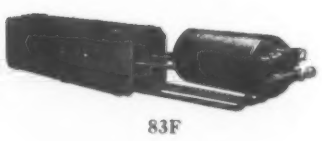
89F L.H.
90F R H.

85F R.H.
86F L.H.

93F

94F

84F


83F

18F

17F

16F

58F

24F

62F

63F

74F Illustrated
75F 76F 78F